

Land and Resource Management Plan for the Allegheny NF

Final Environmental Impact Statement

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Plan Amendments

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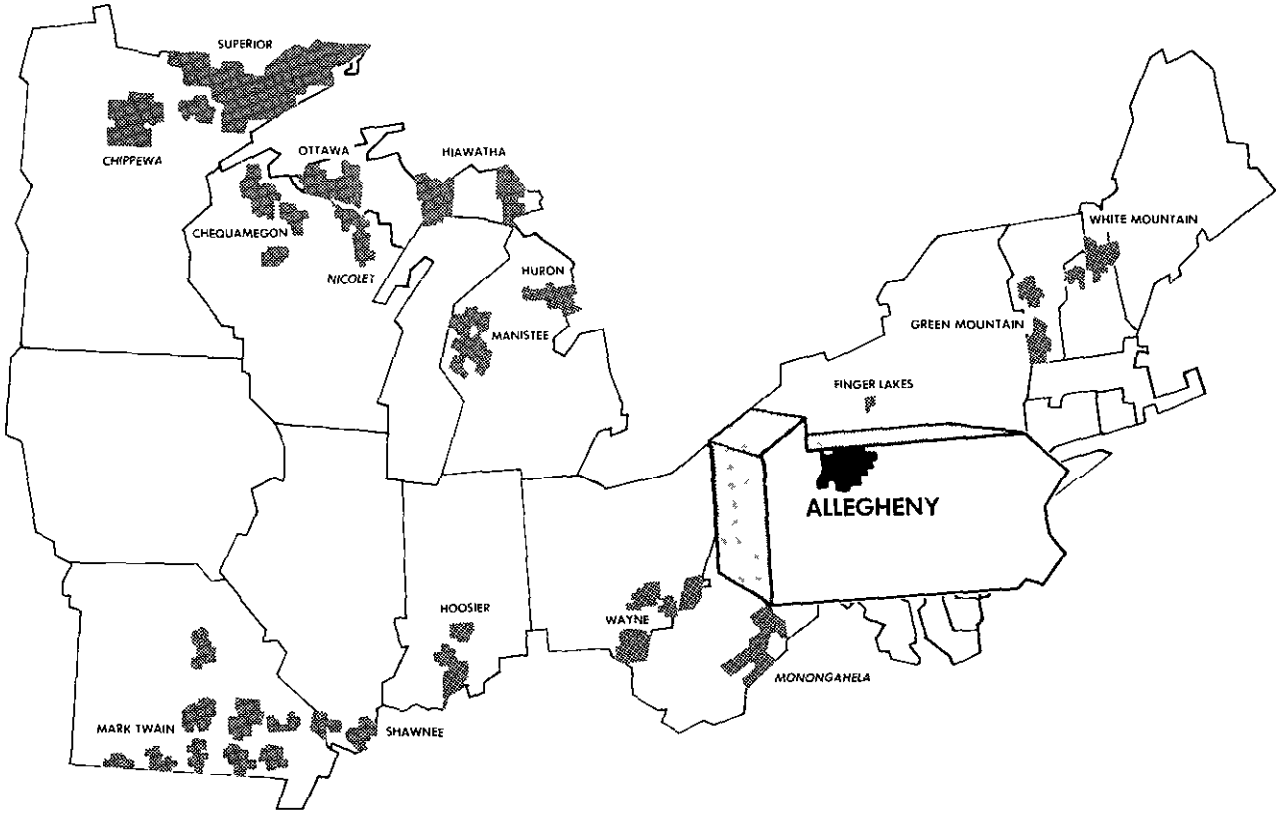
Forest
Service

**Eastern
Region**

Final Environmental Impact Statement

Land and Resource Management Plan

ALLEGHENY NATIONAL FOREST



FINAL ENVIRONMENTAL IMPACT STATEMENT
ALLEGHENY NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

Elk, Forest, McKean, and Warren Counties, Pennsylvania

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Abstract: Five alternatives for development of a Land and Resource Management Plan for the 510,530-acre (including water area) Allegheny National Forest are described and evaluated. The alternatives are: (A) selection management with an increase in non-market commodities (dispersed recreation, wilderness, and wildlife) and a small decrease in market commodities (timber and developed recreation); (B) continuation of current management (emphasis on developed recreation and low wildlife investments) modified by a slight increase in timber production over the present; (C) large increase in market commodities (timber, developed recreation, and minerals), and minimal wildlife investments. (D) small increases in both market and non-market commodities; and (E) selection management with high investments in wildlife and recreation and a moderate increase in timber volumes.

Alternative D is the Forest Service preferred alternative. The plan will guide management of the Forest for the next 10-15 years unless revised sooner.

PREFACE

The regulations implementing the Forest and Rangeland Renewable Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), require the preparation of a Forest Plan by each National Forest of the National Forest System. These regulations also require preparation of an Environmental Impact Statement for each of the proposed plans.

This Final Environmental Impact Statement (FEIS) has been prepared following procedures established by Forest Service regulations for implementing the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations (40 CFR Part 1500).

The Forest Plan is a companion to this document. The plan was prepared following procedures established for National Forest System Land and Resource Management Planning (36 CFR Part 219).

For purposes of NEPA disclosures, this Final Environmental Impact Statement and the Forest Plan are treated as combined documents (40 CFR 1506.4).

SUMMARY

PURPOSE AND NEED

This EIS provides a detailed analysis of alternatives for managing the Allegheny National Forest. The accompanying Forest Plan presents the preferred alternative (from the FEIS) in detail and guides management for the next 10 to 15 years. It provides for multiple-use and the sustained yield of goods and services in an environmentally sound manner.

The Forest Plan:

- Establishes specific management direction for the next 10 to 15 years and projects some long-range goals and objectives for the Allegheny National Forest;
- Specifies standards, guidelines and approximate timing and vicinity of management practices necessary to achieve that direction;
- Establishes monitoring and evaluation procedures needed to ensure that direction is carried out and to see how well resource yields and environmental effects were projected;
- Will be reviewed and updated if necessary every five years.

National Forest land and resource management planning is required by the 1974 Forest and Rangeland Resources Planning Act (RPA) as amended by the 1976 National Forest Management Act (NFMA). This Final Environmental Impact Statement (FEIS) meets requirements of the National Environmental Policy Act of 1969 (NEPA), Council of Environmental Quality (CEQ), NEPA regulations, CEQ NEPA Regulations (40 CFR 1500), and NFMA implementing regulations (36 CFR 219). For purposes of NEPA disclosure, the FEIS and Forest Plan are treated as combined documents (40 CRF 1506.4) to reduce duplication and paperwork.

NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLANNING

The Final Environmental Impact Statement (Final EIS) and Forest Plan are the result of a four-year planning effort. Similar Forest Plans are required for all 154 National Forests.

A 10-step planning process is required by the National Forest Management Act implementing regulations (36 CFC 219.12). This process encourages full public involvement in identification of public issues, management concerns and the opportunities to resolve them by implementing the Forest Plan. These issues, concerns, and opportunities define the scope of the Draft Environmental Impact Statement and help establish the range of alternatives to be analyzed in the process.

The process also makes use of various resource specialists on an interdisciplinary planning team to develop the planning process, collect data on Forest resources, and analyze the current and projected situation. The team developed alternative ways of managing the Forest resources. Then they estimated resource yields, costs, and the effects, in light of identified issues and concerns. Computer analysis projected costs and benefits for a 150-year period to aid in selecting the alternative with the most net public benefit.

The interdisciplinary team works under the supervision of the Forest Supervisor and his management team. The management team oversees the entire planning process and recommends the Forest Service "preferred alternative" to the Regional Forester for approval. After the Regional Forester approves the Forest Plan, the Allegheny National Forest begins to implement it. Subsequent monitoring and evaluation will ensure the Forest achieves the specified goals.

FOREST LOCATION

The Allegheny National Forest is located in Northwestern Pennsylvania and has 510,530 acres (including water area). The Forest is within a day's drive of Cleveland, Pittsburgh, Philadelphia, Washington, DC, and New York City. Principal access routes are Interstate 79 from the south and 80, 90, and U.S. 6 from the north, east, and west.

MANAGEMENT PROBLEMS

National Forest land management planning seeks to resolve public issues and management concerns. The first step in preparing the Forest Plan was to identify concerns and issues. These were grouped into management problems to be resolved during the planning process.

Six major problems were defined. Resolutions of any of these problems affects the resolution of the other problems. Finding the resolution which provides the greatest benefits to society is a complex task.

The six management problems are described below:

MANAGEMENT PROBLEM 1: PROVIDING DEVELOPED RECREATION

Should the Forest Service provide more recreation opportunities around the major water attractions--Allegheny Reservoir, Allegheny and Clarion Rivers, and Tionesta Creek?

MANAGEMENT PROBLEM 2: PROVIDING DISPERSED RECREATION

How should resource development and access to the Allegheny National Forest be managed to balance the desire for various degrees of solitude expressed by hikers, off-road vehicle riders, and people involved in other dispersed recreation activities?

MANAGEMENT PROBLEM 3: TIMBER MANAGEMENT

How much timber volume should the Allegheny National Forest produce, and how should understory plants be managed to assure replacement of harvested trees?

MANAGEMENT PROBLEM 4: WILDLIFE HABITAT

How should the Allegheny National Forest manage vegetation and control hunter access to provide wildlife habitat?

MANAGEMENT PROBLEM 5: PRIVATE OIL AND GAS DEVELOPMENT

The private sector owns 94 percent of the oil and gas rights under the Allegheny National Forest. Development rates for these private rights are determined by the owners. We have made separate projections for oil and gas development using low as well as high demand. The actual rate of oil and gas development may vary between the low and the high demand projections, but we predict the average will be closer to high than low. The Forest Service seeks to lessen the environmental impacts of development by working cooperatively with developers, as well as State and Federal regulatory agencies. Alternative policies for managing development were not considered.

MANAGEMENT PROBLEM 6: WILDERNESS

Congress has now passed legislation to establish the Hickory Creek and Allegheny Islands Wilderness areas. The legislation also designates portions of Cornplanter, Tracy Ridge, Allegheny Reservoir and Allegheny Front as the Allegheny National Recreation Area.

Congress also directed that evaluation of other areas for Wilderness is not necessary at this time. The Wilderness issue is thus resolved for this round of planning.

FOREST PLAN ALTERNATIVES

This Final EIS outlines a wide range of forest alternative. Each resolves the first four management problems differently, but wilderness and oil/gas development are treated the same in each alternative . Five alternatives (including the preferred) were selected for detailed analysis. Each alternative addresses specific public issues, management concerns, and requirements of laws, regulations or policies. Each plan alternative, has a different management emphasis, providing for varying combinations of resource yields. Each incorporates management standards and guidelines that ensure multiple-use management and environmental protection.

ALTERNATIVE A

This alternative emphasizes non-market benefits to society, those benefits that do not return dollars to the U.S. Treasury. Examples include hiking, hunting, and birdwatching.

Developed Recreation - Small, developed campgrounds (less than fifty sites) will be provided along the major river corridors and at major trailheads. No new sites will be constructed around the Allegheny Reservoir.

Dispersed Recreation - Fifty percent of the Forest will be managed to provide semi-primitive recreation opportunities. Many new pedestrian trails will be constructed. There will be no off-road vehicle opportunities.

Timber Management - To enhance visual quality, the Forest will be managed to produce larger trees than at the present time. Selection management will be used extensively. The volume of timber for sale in the first decade will be lower than at present.

Wildlife Habitat - Habitat quality will be improved for game and non-game wildlife species. Fisheries management will be intensive. Vehicular access to the Forest will be reduced.

ALTERNATIVE B (CURRENT SITUATION)

This alternative describes management which yields the approximate level of goods and services currently provided by the Allegheny National Forest.

Developed Recreation - All existing campgrounds will be maintained, but no new ones will be constructed.

Dispersed Recreation - Fifty to sixty percent of the Forest will be managed to provide a roaded-natural recreation opportunity. Few new pedestrian trails will be constructed. The off-road vehicle trail system will continue to be expanded to nearly double its present mileage.

Timber Management - Annual timber sale volumes will be slightly increased to meet the Resources Planning Act (RPA) sale targets. Even-aged management will be the predominant harvesting method.

Wildlife Habitat - Habitat will be improved for deer and turkey. Investment levels will be relatively low, and most habitat projects will be accomplished through the timber sale program.

ALTERNATIVE C

This alternative emphasizes the production of priced market benefits--those that return dollars to the U. S. Treasury. Examples of market benefits include timber volume and recreation receipts.

Developed Recreation - This alternative provides the largest increase in developed recreation opportunities. New campground complexes are proposed on the Clarion, Allegheny, and Tionesta Rivers, expansion of Dewdrop, Webbs Ferry, and Willow Bay into full spectrum recreation complexes, and construction of recreation resorts at Kiasutha and Sugar Bay. Private corporate financing would be sought for four of the larger campgrounds and the two resorts.

Dispersed Recreation - Nearly all of the Allegheny National Forest will be managed to provide roaded-natural recreation opportunities. New pedestrian trails will be constructed, mostly around the developed recreation areas. The off-road vehicle trail system will be expanded by almost 50 percent.

Timber Management - Timber sale volumes will double in the first decade. Clearcutting and shelterwood harvests will be used almost exclusively. To increase dollar returns, trees will be harvested at younger ages than in Alternatives A and E.

Wildlife Habitat - All wildlife habitat improvement projects will be made through the timber sale program. Habitat for deer and grouse will substantially improve. Fisheries management will be easier than in Alternatives A and D.

ALTERNATIVE D (THE PREFERRED ALTERNATIVE)

This alternative emphasizes both market and non-market benefits. This is the Forest Service's preferred alternative.

Developed Recreation - This alternative provides a moderate increase in developed recreation opportunities by adding needed facilities at Dewdrop and Willow Bay, constructing new small-scale campgrounds and boat launches along the major river corridors, and developing a motel and restaurant complex adjacent to the Allegheny Reservoir Marina. This complex will include a restaurant, gas station, approximately 20 RV campsites, and 30 motel units. Private corporate financing would be sought for the new campground at Tionesta (Hopkins).

Dispersed Recreation - Large areas offering semi-primitive motorized recreation opportunities will be provided, as will large areas for roaded-natural recreation opportunities. Many new pedestrian rails will be constructed, primarily in the semi-primitive areas. The off-road vehicle trail system will be expanded to nearly double the present mileage.

Timber Management - Timber sale volumes will be increased significantly above current levels, but not as high as in Alternative C. Clearcutting and shelterwood harvests will generally be used.

Wildlife Habitat - Habitat investments will be at moderate levels and be directed primarily at deer and turkey. Fishery improvements will also be at a moderate level. Ease of vehicular access to the Forest is between that provided by Alternatives A and C.

ALTERNATIVE E

This alternative emphasizes both market and non-market benefits.

Developed Recreation - This alternative provides the second largest increase in developed recreation opportunities. (Alternative C provides the largest increase.) Webbs Ferry, Willow Bay, and Minister Creek would be expanded, new small-scale campgrounds would be added along the river corridors and at major trailheads, a large campground would be constructed at Tionesta, and a resort would be constructed at Hodge Run on the west side of the Reservoir. Private corporate financing would be sought for the new construction at Webbs Ferry, Tionesta, and Hodge Run.

Dispersed Recreation - Roaded-natural, semi-primitive motorized, and semi-primitive non-motorized opportunities will be provided. Many new pedestrian trails would be provided. The proposed off-road vehicle trails will more than double the present system.

Timber Management - Timber sale volumes will significantly increase above current levels. Increased attention will be given to visual quality. Selection management will be used extensively. Where even-aged management is used, trees will be harvested at larger sizes than at present.

Wildlife Habitat - Habitat will be significantly improved for a variety of game and non-game species. Grouse habitat will be managed intensively. A substantial fisheries habitat improvement program will be undertaken in the Allegheny Reservoir. Ease of vehicular access is nearly as great as that in Alternative C.

COMPARISON OF ALTERNATIVES

Chapter 2 of the Final EIS also provides detailed comparisons of the Forest Plan alternatives (NEPA regulations 40 CFR 1502.14 (b)). The alternatives are compared by:

- Management goals and objectives
- Quantities of resource yields and management activities
- Acreage distribution to "management areas"

- Response to public issues and management concerns
- Their effect upon the physical, biological, social, and economic environment.

Pages 2-49 through 2-98 contain a detailed comparison of Forest Plan alternatives.

The locations of management areas are shown on maps developed for each alternative, including the preferred.

AFFECTED ENVIRONMENT

Chapter 3 of the FEIS profiles the existing environment of the Allegheny National Forest, including its physical, biological, social and economic features. Features described are limited to those that would be affected if any of the alternatives were implemented.

PHYSICAL ENVIRONMENT

Soils and Landform - The Allegheny National Forest is located in the unglaciated physiographic area known as the Allegheny Plateau. Elevations range from 1,000 to 2,300 feet. Soil drainage and slope are the two most important soil characteristics influencing the effects of management practices on the environment.

Energy Minerals - The Allegheny National Forest lies in the heart of the oil and gas producing region of Pennsylvania. The region produces high-quality Pennsylvania-grade crude oil. Large quantities of natural gas are also produced with the crude oil.

The federal government owns only six percent of the mineral rights under the Allegheny National Forest. The remainder are held privately and can be developed by their owners.

Mineral Materials

There are more than 50 active pits within the Allegheny N.F., which produce common variety minerals such as sandstone, conglomerates, and sand and gravel. Common mineral production in 1982 was estimated to be 500,000 tons with an investment value of about two million dollars.

Other Mineral Resources

The Allegheny National Forest has about 27,000 acres of land used for underground storage of natural gas. The total acreage suited for this use is unknown, but it may be as high as the total National Forest acreage. In addition, the Forest contains known deposits of coal and may also contain clay and shale reserves of suitable quality for use in the brick industry.

Visual Resources - The combination of terrain and vegetation produces a pleasing Forest landscape. Relatively flat ridge-tops are divided by deep, steep- sided valleys. Although trees cover most of the Forest, savannah or orchard conditions are found in some drainages. Here grasses, wildflowers, and fern dominate, with occasional trees.

Cultural Resources - Cultural resources are the physical remains left by people who occupied or visited areas in historic or prehistoric times. Most of the prehistoric remains are located in the Allegheny River Valley. Remains of the first Europeans to visit the region have also been found. Historic sites of early logging and oil and gas activities are very abundant.

Water Quality - The Allegheny National Forest is a region of abundant water. The available water supply exceeds domestic, commercial and industrial needs currently and into the forseeable future. Some streams contain polluted sections primarily as a result of past and current oil and gas development. Other sources of pollutants to the streams are sedimentation from logging operations, road construction, and other earth-moving activities.

Roads and Trails - Principal access routes to the Forest are Interstates 79, 80, and 90, and U.S. Highways 6, 62, and 219 and PA 59 and 66. There is a good distribution of primary travel routes running both north-south and east-west.

BIOLOGICAL ENVIRONMENT

Riparian Areas - Riparian areas on the Allegheny National Forest occur primarily along streams. Many

of these areas provide important wildlife habitat. They are also valuable as sediment filters, preventing eroded soil from entering streams.

Vegetation - The present vegetation on the Forest originated as a result of widespread clearcutting earlier in this century. About 53 percent of the Forest is Allegheny hardwood type. This forest type contains black cherry, red maple, yellow poplar, white ash, and sugar maple. Somewhat less than 16 percent of the Forest is northern hardwood type, which is similar, but has less black cherry and more sugar maple.

The oak type occurs on about 18 percent of the Forest. Minor portions of the Forest are in open savannahs or orchard conditions, conifer plantations, and aspen stands.

Browsing by the white-tailed deer has altered much of the natural understory of the Allegheny National Forest. As much as 50 percent of the Forest understory consists of various ferns and striped maple. These species prevent tree seedlings from replacing harvested trees.

Since the early 1960s, even-aged management has been the predominant silvicultural system. Both clearcutting and shelterwood harvest techniques have been used.

Wildlife - There are 312 species of wildlife known to occur on the Allegheny National Forest. The white-tailed deer, wild turkey, and black bear are currently the most important game species.

There are 71 fish species. Anglers are most interested in walleye, smallmouth bass, muskellunge, northern pike, yellow perch, brook trout, brown trout, rainbow trout, white and black crappies, largemouth bass, and bluegills.

Threatened, Endangered, and Species of Special Concern - The bald eagle is the only endangered species that is known to occur on the Forest. The eagle is a migrant, and no nests have been located on the Forest. The osprey and Henslow sparrow have been listed by the State as threatened.

Recreation Opportunities - The Allegheny National Forest provides opportunities for many different recreational activities, classified as either developed or dispersed recreation. Developed recreation includes those activities available at recreation sites such as campgrounds, picnic areas and swimming beaches. Dispersed recreation occurs in the general forest environment. Examples include hiking, hunting and fishing.

Developed Recreation - Developed recreation sites are located throughout the Forest, but the focal area is the Allegheny Reservoir. Of the 17 campgrounds on the Forest, 10 are located on the shores of the Reservoir.

Dispersed Recreation - Dispersed recreation consists mainly of hunting, fishing, hiking, and driving for pleasure. Each of these activities are dependent on the many Forest roads.

The Forest's 170-mile trail system provides access for hikers, hunters, anglers, ORV riders, and cross-country skiers.

Canoeing, motorboating and water-skiing continue to grow in popularity. Limited access to water bodies may be discouraging some participation.

Wilderness - Each Forest Plan alternative was formulated to comply with the "Pennsylvania Wilderness Act of 1984." This legislation established the Hickory Creek and Allegheny Islands Wilderness Areas. It also designated portions of the Tracy Ridge, Cornplanter, and Allegheny Front undeveloped areas as the Allegheny National Recreation Area.

Special Recreation Designations - The Allegheny National Forest has several specially designated recreation areas on Forest. First, the Allegheny National Recreation Area was established in 1984 as part of the Pennsylvania Wilderness Act. It consists of about 23,100 acres and is located along the Allegheny Reservoir and River.

There are two scenic areas located on Forest. They are: 1. the Tionesta Scenic Area, dedicated in 1940 and consisting of 2,018 acres of virgin beech-hemlock foreest, and 2. the Hearts Content Scenic Area, designated in 1969 and consisting of 122 acres of white pine, hemlock, and mixed hardwoods.

The Allegheny National Forest also contains several rivers which have received national and state recognition. The Allegheny River from Kinzua Dam to East Brady is currently being studied for inclusion in the Federal Wild and Scenic River Study, and the Clarion River and Kinzua Creek are currently included within the Heritage Conservation and Recreation Service's Nationwide Rivers Inventory. In addition, both Kinzua Creek and the Clarion River are also on top of the priority list of waterways considered for potential State Scenic River designation. Other waterways under State consideration include Bear Creek, Tionesta Creek, and the East Branch of Tionesta Creek.

Experimental Forest and Research Natural Areas - There are currently two specially designated areas located on the Allegheny National Forest. They are: 1. The Kane Experimental Forest, and 2. Tionesta Research Natural Area.

In addition, four other areas are presently being considered for classification as research natural areas. They are:

1. Muzette Tract - 20 acres - SAF Type 22
2. Crulls Island - 96 acres - SAF Types 61 and 62
3. Thompson Island - 69 acres - SAF Types 61 and 62
4. Sheffield Compartment 126 - 276 acres - SAF Type 28

SOCIAL AND ECONOMIC ENVIRONMENT

Current Social Situation - The primary zone of influence of the Allegheny National Forest contains the northwestern Pennsylvania counties of Warren, McKean, Forest and Elk. Some local influences also extend into various adjacent counties of Pennsylvania and New York. Regional influence extends to the Pittsburgh area and to the Youngstown-Cleveland vicinity in Ohio.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of implementing the Forest Plan alternatives are described in terms of physical, biological, social and economic effects.

Environmental consequences are the anticipated results of applying different combinations of management prescriptions to land areas. The consequences vary for each Forest Plan alternative because different mixes of prescriptions produce different consequences.

Chapter 4 of the FEIS contains two major sections. The first describes the effects of individual management practices (page 4-8). The second major section (page 4-61) describes the cumulative effects of all management practices on each component of the environment (soils, vegetation, wildlife, and so forth). Other sections describe mitigation measures, effects that cannot be avoided, short-term uses and long-term productivity, and irreversible or irretrievable commmitments of resources.

Effects of Individual Management Practices

Table 1 (see page xvii) summarizes the elements of the environment which may be affected by management practices when implementing the Forest Plan alternatives.

Cumulative Effects

Cumulative environmental consequences of the alternatives result from applying combinations of management practices. The mix of prescriptions under each alternative produces different levels of resource outputs, goods, and services, including recreation benefits, wildlife habitats, and timber production.

Forest-wide and management area standards and guidelines, explained in Chapter 4 of the Forest Plan, provide a base level of protection for all resources and measures to mitigate adverse environmental effects. These base levels of protection are incorporated into all management prescriptions. Therefore, none of the alternatives produce unacceptable environmental consequences. However, the level of environmental protection above the base line level differs among the alternatives.

Table 1: Potential Effects of Management Practices on Environmental Elements

"S" denote elements of the environment that have the potential to be significantly affected by management practices. Effects will be confined to acceptable levels.

"M" indicates that Forest Plan standards and guidelines mitigate the effects of a particular practice on the specified element of the environment.

A "Blank" indicates the practice has insignificant or no effects.

	AFFECTED ELEMENTS OF THE ENVIRONMENT																					
Management Problem and Practices	Soil and Landform	Energy Minerals	Mineral Materials	Other Mineral Resources	Visual Resources	Cultural Resources	Water Quality	Noise	Roads	Riparian Areas	Vegetation	Wildlife	Fish	T, E, & Species of Concern	Recreation Opportunities	Wilderness	Special Rec Designations	Exp. Forest/Research Nat. Areas	Plan/Program - Other Agencies	Private Property Rights	Social Economic Conditions	
1. DEVELOPED RECREATION																						
Developed Recreation Sites	M			M	M	M	S	M	M			M	M	S		M		S	M	*		
2. DISPERSED RECREATION																						
Dispersed Recreation Mgt.	M			M	M	M	S	M	M		M	M	M	S			M	M	M	*		
3. TIMBER MANAGEMENT																						
Even-aged Silviculture	S			S	M	S	S	S	M	S	S	M	M	S		M		S	M	*		
Uneven-aged Silviculture																						
Even-aged Thinning	S			M	M	S	S	S	M	S	S	M	M			M		S	M			
Roads	S	S	S	S	M	S	S	S	M		S	M	M	S		M						
Herbicide Treatment	M			S	M	M			M	S	M	M	M									
Fertilization and Fencing					M	M			M	S			M									
4. WILDLIFE HABITAT																						
Non-Structural Hab. Imp.	M			S	M				S	S	S	S	M	S			M		*			
Structural Wildlife Hab. Imp.	M			M	M				S		S		M	S			M					
Structural Fish Hab. Imp.					M				S		S		M	S			M					
5. PRIVATE OIL/GAS DEVELOPMENT																						
Energy Mineral Developments	S	S	S	S	M	S	S	S	S	S	S	S	S	S	M	M	S	S	S	*		
Mineral Materials Development	S	S	S	M	M		S	S					M	S		M			S			
6. WILDERNESS																						
Wilderness Management		S	S	S		S			M	S	S		M	S	M			S	M	*		

*Social and Economic Effects are discussed in Section D, Cumulative Effects.

Possible significant cumulative environmental consequences of the alternatives are listed below:

Soils

Cumulative effects on soil productivity are primarily a result of activities that physically disturb the soil and landform or remove the surface from production. Alternatives A and B have the least effect on soil productivity whereas Alternative E has the most.

Energy Minerals

Consumption of the nonrenewable energy mineral resource is affected by the rate of energy mineral development and the acreage of federal minerals removed from production. Under the high energy demand scenario within any alternative, the rate of energy production will be two and a half times greater than the low demand scenario. The amount of federal mineral ownership totals about 30,000 acres, of which 40 percent is withdrawn from mineral production in each alternative.

Mineral Materials

The amount of mineral materials used and the acreage of the Forest withdrawn from entry for these materials summarize the effect on this resource. The acreage withdrawn from entry is the same for all alternatives, approximately 6.5 percent of the total Forest acres. However, the amount of mineral materials extracted does vary between alternatives based primarily on the new road construction. Alternatives A and B rank the lowest in total rock consumption, and Alternatives C and D rank the highest. Rock consumed under a high oil and gas demand scenario would increase extraction about two and a half times that in a low demand.

Visual Resource

Cumulative effects of change in the natural appearing forest are measured through area in continuous and broken forest canopy as well as the amount of road building. Alternative A shows the least change from the present condition in the natural appearing continuous forest canopy with E ranked next. Alternative C would show the most change in the natural appearing landscape with over one half the forest in broken canopy.

Alternative D ranks only slightly less than C. The effect of a high rate of oil and gas development on any alternative could increase areas where change from the natural appearing forest is evident by 25 percent.

Conversely, visual variety increases with the increase in broken forest canopy. Alternative E would have the most visual variety and A the least.

Cultural Resources

Cultural resources will be protected in all alternatives. Prior to earth-disturbing activities, a survey is made to locate and recommend protection measures for any prehistoric or historic sites or artifacts found in the area. In addition to protecting cultural resources, such surveys also add to the understanding of past ways of life in this part of Pennsylvania.

Water Quality

Estimated changes in sedimentation rates were used to indicate the cumulative effect of management practices on water quality. The rate of sediment production in B is 50 percent higher than from unmanaged forest land but only 11 percent of that from crop land. Alternative B ranks lowest of the alternatives in production of sediment but is closely followed by Alternative A. Alternative E ranks the highest in production of sediment being 23 percent higher than B. Alternatives C and D are moderate at 15 and 18 percent higher, respectively.

Under all alternatives, sediment generated from oil and gas development under the high demand scenario would be more than three times that produced under the low demand scenario. Production of wastewaters, including production brines, and the level of oil spills would also be expected to increase proportionately if a high rather than low level of oil and gas development occurs.

Noise

All alternatives increase noise levels from the present with Alternatives A and B being the lowest and C the highest. Alternatives D and E produce moderate noise levels. The effect of a high oil and gas demand would

increase noise levels in all alternatives equally with the net change being more significant in the quieter alternatives.

Roads

Total road needs and traffic management vary by alternative. Alternative A requires the smallest road system but only 60 percent will be closed to public traffic. This reflects the need for more frequent use for uneven-aged timber management. Alternatives E, D, and C require larger road systems, respectively, but C and D close or restrict public use on over 80 percent of the road system compared to the 60 percent in Alternative E. Alternative B requires a somewhat smaller road system but also proposes to close nearly 80 percent of them to public use. The rate and extent of oil and gas development would not have a significant effect on the size of the Forest Service road system in any alternative.

Riparian Areas

In all alternatives, riparian areas would be managed to enhance and protect riparian dependent values. The potential for improvement in riparian area values is greatest in those alternatives with the most wildlife habitat improvement practices. The alternatives rank C, B, D, E, and A respectively, with C being the lowest in potential for riparian area value improvement. Under a high level of oil and gas development, less wildlife habitat improvement would occur, including less work in riparian areas for all alternatives.

Vegetation

The percent of the Forest in the major timber types is expected to change significantly from the present condition in Alternatives A, B, and C. In Alternative A, up to one third of the Allegheny hardwoods will convert naturally to Northern hardwoods with 15 percent converting in Alternative B. In Alternative C, about 40 percent of the oak would convert to Allegheny hardwoods.

Horizontal diversity, which relates to age class distribution, would be greatest in Alternatives C and D. Old growth increases in all alternatives with A being the highest at 43 percent and C the least with 11 percent, versus the present condition of one percent. Under a

high level of oil and gas development, slight increases would be expected in each alternative in the Northern hardwood timber type and the amount of old growth.

Wildlife

The cumulative effect of all the management practices result in maintaining minimum viable populations of all the management indicator species. An increase in population for about half the species can be expected in each alternative. Alternatives A and E emphasize increases in species related to old growth and mature deciduous forest, whereas the other alternatives show increases in species related to regenerating and early successional stages of deciduous forest. If a high level of oil and gas development occurs, decreases in population will occur across each alternative, particularly in species sensitive to human disturbance.

Fish

Alternatives A and E provide the largest increases in both the warm and cold water habitat. Alternative B and C provide the lowest total habitat. Habitat will be provided in all alternatives to maintain viable populations of all fishes.

If a high level of oil and gas development occurs, there may be a decrease in cold water fish habitat of around 5 percent by the end of the third decade.

Threatened, Endangered, and Species of Special Concern

The effects of energy mineral development on species of special concern may not be entirely mitigated by standards and guidelines. Retaining special habitat and protecting species from disturbance during the breeding season is only possible if the oil and gas operator is willing. This applies equally to all of the alternatives.

Recreation Opportunities

The cumulative effect of all management practices can be seen in the resulting mix of recreation opportunities provided in each alternative. Alternative A emphasizes a high demand of semi-primitive recreation opportunities whereas C emphasizes the Roaded Natural/Rural

opportunities. Alternatives D and E provided some increases in all classes of recreation opportunity with Alternative E showing the highest total increase of all alternatives. If a high level of oil and gas development occurs, use will generally decline by 9 percent. The shift in the type of recreation opportunity to roaded natural may be most evident in Alternatives A and then B and D because of their greater emphasis on semi-primitive recreation opportunities.

Plans and Programs of Other Agencies

All alternatives are compatible with other agencies plans and programs.

However, payments to counties do vary by alternative and reflect the amount and value of timber harvested, the level of recreation site development, and the amount of land withdrawn from revenue producing activities such as wilderness areas. From the lowest dollar return to the highest, the alternatives rank A, B, E, C, and D.

Experimental Forest/Research Natural Areas

Energy mineral development may affect these means by altering the natural environment, the main attribute needed if they are to continue as research areas. Any research studies or progress could be impacted by vegetation removal/alteration and soil disturbance.

Private Property Rights

In all alternatives the exercise of private property rights will be honored. In some cases, the federal government will acquire these rights to protect surface resource uses. There is a potential that private mineral development may be affected if economic rock sources for roads and well sites are not available. This possibility increases as the Forest Service use of these materials increases.

Social and Economic

Social and economic effects of the Forest Plan alternatives can be placed in two categories, effects on local economy and lifestyle changes on social groups. The effects on local economy was measured in terms of total jobs provided. Alternatives C and E ranked

highest respectively followed by D. Alternatives A and B offered the fewest total jobs. Implementing any alternative would not significantly affect the lifestyle of the social groups associated with the Forest.

Mitigation Common to All Alternatives

Soils and Landform

Standards and guidelines for the major soil groups on the Forest ensure that we maintain soil productivity and minimize soil loss. Mitigation measures include:

-- Seasonal restrictions on logging or requirements for special logging equipment to reduce compaction;
-- Use of surfacing or geotextiles in road construction;
-- Restriction on the size of the area occupied by skid trails and landings;
-- Use of cable logging or other special techniques on steep slopes;
-- Erosion and sediment control techniques.

Energy Minerals and Mineral Materials

Standards and guidelines for mineral resources are designed to protect valid existing rights, encourage prudent development and use of mineral resources, and minimize the effect of development on surface resource values.

-- Use and maintenance of National Forest roads.
-- Requirements and techniques for oil and gas well developments.
-- Operating and implementation plans for rock pit development.

Visual Quality

Standards and guidelines for each management area are designed to minimize the adverse effects of management practices, such as timber harvesting and oil and gas development. These mitigation measures are keyed to the visual quality objectives for specific land areas. Specific techniques used to meet these objectives are detailed in Landscape Management Handbook, and include:

-- Facility, road, and timber sale layout and design
-- Use of vegetative screening, native materials, or earthtone colors to minimize the visual impacts
-- Size, shape, and timing of projects.

Cultural Resources

Cultural resources surveys are conducted in all areas where earth-disturbing activities are planned. Sites identified by such surveys will be evaluated and protected as appropriate to their significance. To protect sites, proposed activities may be modified by:

-- Avoiding the site and its immediate vicinity;
-- Evaluating and interpreting the site before it is disturbed.

Water Quality

A set of specific standards and guidelines is provided for each major resource whose management might adversely impact water quality. Such resources include timber, oil and gas, transportation, and recreation. Key mitigation measures are:

-- Planning and constructing permanent roads, temporary roads, skid trails, landings, and well sites to reduce erosion and sedimentation;
-- Minimizing stream crossings by roads and trails;
-- Erosion/Sediment control measures such as using filter strips to trap sediment;
-- Stabilizing disturbed soil quickly;
-- Establishing buffer strips along streams in herbicide and fertilization projects;
-- Complying with water pollution regulations.

Roads

The adverse effect of management practices on roads is usually damage to the road surface caused by inappropriate use. This can be mitigated by designing, building, and managing roads for the anticipated traffic.

Riparian Areas

Standards and guidelines for riparian resources ensure that these resources will be given preferential consideration when managing riparian areas. Management of riparian areas may include activities such as:

-- Locate recreation sites appropriately in floodplains and use erosion and sedimentation control practices;
-- Limit streamside vegetation removal;
-- Locate new roads outside of riparian areas;
-- Minimize stream crossings;
-- Design any necessary stream crossing structures such that streamflow patterns are not altered and fish passage is not impeded;
-- Dispose of wastewater from oil developments and sewage from recreation developments in accordance with state and federal regulations.
-- Management of vegetation in riparian areas for wildlife habitat, such as winter conifer cover along streams or emergent aquatic vegetation around impoundments;
-- Maintenance of water quality and fish habitat by avoiding excessive soil disturbance and using filter and buffer strips.
-- Avoid constructing facilities in floodplains and wetlands unless no practical alternative exists.

Vegetation

The effects of various managment practices on vegetation are mitigated by standards and guidelines within the Forest Plan. This includes guidance on such activities as:

-- Maintenance of vegetative species variety;
-- Integrated pest management;
-- Choice of silvicultural systems;
-- Reforestation
-- Stocking levels
-- Size of temporary openings.

Wildlife

Wildlife management standards for each management area ensure that we maintain viable populations and enhance habitat of native species forest-wide. Measures used include:

-- Proper location of developed recreation sites, roads, and trails;
-- Maintenance of a diversity of food producing trees, shrubs, and vines;
-- Providing permanent openings with vegetation that provides food, nesting, brood, or other important wildlife cover;
-- Retaining of snags and den trees;
-- Managing and constructing impoundments and potholes for waterfowl;
-- Protecting and enhancing the habitat of endangered, threatened, and species of concern;
-- Managing traffic on roads to minimize disturbance to wildlife during critical nesting and brooding periods and to avoid the overharvesting of bear and wild turkey;
-- Use herbicides which will have a minimal effect on wildlife and carefully select areas to be treated;
-- Revegetating temporary roads and other disturbed areas with plant species beneficial to wildlife.
-- Regulating the size and distribution of commercial and noncommercial cuttings.

Fish

Standards and guidelines in the Forest Plan also help to minimize the effects of management practices on fish. Measures include such activities as the following:

-- Proper location of developed recreation sites, roads, and trails;
-- Revegetation of disturbed areas;
-- Regulating public access;
-- Seasonal logging restrictions;
-- Ensuring that fish passage is provided in streams unless prescribed otherwise for fisheries management purposes.
- Using both buffer and filter strips as necessary;
- Plugging abandoned wells;
- Proper disposal of waste water from oil developments and from developed recreation sites;
- Improving fish habitat in the Allegheny Reservoir and in stocked streams;
- Applying approved herbicides in a manner in which minimizes the likelihood of it entering streams.

Threatened, Endangered, and Species of Special Concern

The effects of all management practices on threatened and endangered species and on species of special concern are mitigated by standards and guidelines, with one exception. The effects of private energy mineral development on species of concern may not be entirely mitigated. Mitigation measures include the following:

-- Proper location of developed recreation sites, roads, trails, timber cutting units, herbicide treatment areas, wildlife and fish habitat improvement projects, reforestation projects, and mineral materials development sites;
-- Regulating public access and other management practices during critical time periods;
-- Enhancing existing habitat and creating new habitat in desirable locations.

Recreation Opportunities

Standards and guidelines in each management area, primarily for recreation and wildlife, mitigate the effects of other activities on recreation. These mitigation measures include the following:

-- Timing of activities;
-- Forest pest management as appropriate;
-- Law enforcement;
-- Road use management;
-- Size, shape, and visual screening of project areas;
-- Treatment of timber harvest residues;
-- Using native vegetation and materials where possible.

Wilderness

Energy mineral development and wilderness use may have an effect on wilderness, but the standards and guidelines will help mitigate these potential effects. They include the following:

-- Purchasing mineral rights from private individuals on a willing seller basis, thereby withdrawing them from development;

-- If private development does occur, use vegetative screening, earth-tone colors, minimum clearing, burial of all utility and pipelines, electric motors to pump wells, and locate as many facilities as possible outside the area;
-- Permit use up to carrying capacity or until over-use, visitor conflicts, or unacceptable environmental damage occurs;
-- Encourage recreation use in areas outside of the wilderness.

Special Recreation Designations

Standards and guidelines mitigate the effects of other uses on special recreation areas such as the Tionesta Scenic Area, the Heart's Content Scenic Area, and the Allegheny National Recreation Area. Mitigation measures which help minimize evidence of human disturbance and retain the primitive setting include the following:

-- Proper design and location of other uses;
-- Screening, shape, and size of project areas;
-- Timing of activities;
-- Road management;
-- Using earth-tone colors;
-- Using native species and materials when possible.

Plans and Programs of Other Agencies

The potential for conflict or duplication of effort with the plans or programs of state, local, or other federal agencies could exist if mitigation measures had not been developed in the Forest Plan. These require appropriate coordination with them regarding resource management and enforcement. These agencies have all had a chance to comment on the draft planning documents, and many have taken advantage of that opportunity.

Private Property Rights

Developed recreation, dispersed recreation, timber management, and wilderness management can all affect the exercise of private subsurface rights. Standards and guidelines mitigate these effects.

-- If subsurface rights are acquired by the federal government to protect surface resource values, paying fair market value mitigates the effect of this on the private owner.

-- Law enforcement, gating of roads, and notifying the public of private property rights will help minimize vandalism and theft of oil and gas equipment by dispersed recreationists.
-- Burial of pipelines and electric lines, cooperative road use agreements, and coordination of activities between timber operators and oil and gas developers will help mitigate the effects of timber management on minerals.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Management of a National Forest is a long-term venture. In essence, forest management requires short-term use of resources in a manner that ensures long-term productivity. None of the Forest Plan alternatives in this FEIS proposes any actions that significantly impair long-term productivity of the Allegheny National Forest.

The following is a summary of the effects of short-term uses on long-term productivity for each environmental condition.

Soils and Landform

Timber harvesting, roads, well sites, rights-of-way, and rock pits are short-term uses required primarily to produce timber and energy minerals. Their long-term effect is to displace soil, reduce soil productivity, and to alter landform on a small percentage of the Forest land area. Alternatives C, D, and E have the highest soil loss, followed by B and then A.

Energy Minerals/Mineral Material Resources

Short-term uses such as the use of developed recreation sites, wilderness, and National Recreation Areas limit the Forest's ability to produce minerals from specific areas. Mineral production, of course, reduces the long-term productivity of the mineral resource, since minerals are nonrenewable.

Visual Resources

Timber harvesting, well site clearing, rights-of-way, and rock pits alter the natural landform and overstory vegetation. Mitigation measures and rapid revegetation minimize the effect of these so that the long-term productivity of the visual resource is not impaired.

Cultural Resources

Cultural resource site identification, evaluation, and protection, where appropriate, maintain the long-term productivity of cultural resources during implementation of short-term uses.

Water Quality

Some short-term uses such as energy mineral production, timber harvest, and road construction have a temporary effect on water quality by increasing sedimentation during facility construction and use. In some cases, water quality may be impaired somewhat over the long term due to chronic sediment and brine production from intensive oil and gas developments.

Riparian Areas

Long term productivity of riparian-dependent resources is maintained in all alternatives by giving these resources preferential consideration during project planning for short-term uses. Fish habitat improvement and impoundment construction improve the productivity of some riparian-dependent resources in Alternatives A, D, and E.

Vegetation

All of the alternatives have some effect on the Forest's long-term ability to produce timber. Even though some uses (such as new roads, rock pits, and oil and gas well development) remove land from timber production, Alternatives C, D, and E all produce higher timber yields than the Forest currently produces (Alternative B) and can maintain them over the long term. Alternative A has a lower long-term sustained yield by design. However, if we were to increase the acres

assigned to timber harvesting in Alternative A, there would be an increase in long-term sustained yield. So Alternative A does not affect a site's inherent ability to produce timber.

Wildlife, Fish, Threatened and Endangered Species

Short term uses such as road building, timber harvesting, and wildlife habitat management affect the amount and distribution of all species in varying degrees. All alternatives maintain viable populations of all native wildlife, fish, and plant species and provide for long-term species diversity. Threatened, endangered, and sensitive species are maintained or enhanced in all alternatives.

Recreation Opportunities, Wilderness, Special Recreation Designations

The mix of recreation opportunities provided in each alternative is a result of the short-term uses chosen in each. All alternatives provide a particular mix of recreation resources whose productivity will be maintained or enhanced over the long term.

ADVERSE EFFECTS THAT CANNOT BE AVOIDED

Implementation of any of the Forest Plan alternatives will result in some adverse environmental effects that cannot be avoided. However, applying the standards and guidelines in the Forest Plan should mitigate the extent and duration of these effects to acceptable levels.

These effects include the following:

- Loss of soil productivity through loss of landform and the surface area in roads, energy mineral, and mineral material development. Soil compaction and soil displacement may reduce but may not eliminate soil productivity in some areas.

- Increased erosion and sedimentation from soil disturbance due to roads. Effects from roads can be long-term, whereas effects from skid trails and landings are short-term.
- Alteration of natural landforms and loss of overstory vegetation due to road construction, oil/gas development, and stone pit development.

- Degradation of water quality due to oil and gas development.
- Changes in visual quality, (some negative), due to timber management, road construction, and oil and gas development.
- Increased levels of noise in the vicinity of timber harvesting, recreation facilities, and oil and gas developments.
- Disruption or displacement of some recreationists and wildlife species due to timber activities, road management, and oil and gas development.
- Long-term changes in recreation opportunities and wildlife diversity, to which some people may object.
- Increased amounts of old growth from present levels, which may be adverse to some people.

Irreversible or Irretrievable Commitments of Resources

Irreversible commitments of resources include (1) the extraction and use of nonrenewable resources and (2) the alteration of a renewable resource which prevents the resource from returning to its natural conditions for a long period of time.

Irretrievable commitments of resources are the lost production or use of resources resulting from a reversible decision.

Standards and guidelines include measures to protect those resources which could be adversely affected by other resource use.

Irreversible Commitments - A summary of the major irreversible commitments of resources which result from implementation of the Forest Plan alternatives and the exercise of private rights is provided below:

- Extraction of oil and gas
- Extraction and use of mineral materials
- Use of fossil fuels in the administration of the National Forest
- Loss of soil productivity, visual quality unroaded recreation, and timber production in land areas committed to roads and stone pits.

Irretrievable Commitments - A summary of irretrievable commitments of resources which result from implementation of Forest Plan alternatives is provided below:

- Loss of production from federally-owned oil and gas withdrawn from leasing
- Loss of some old-growth forests and a continuous forest canopy where even-aged management is applied
- Loss of one type of recreation opportunity when replaced by a different type
- Loss of some types of hunting opportunities due to changes in habitat
- Loss of timber volume production in areas where timber production is not the primary management objective

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CHAPTER 1

Purpose and Need

CHAPTER 1

PURPOSE AND NEED

This chapter presents the reasons for the preparation of the Environmental Impact Statement (EIS). The chapter contains the following sections:

A. The Nature of the Decision (Page 1- 2)
B. Forest Planning Documents (Page 1- 3)
C. Forest Planning Process (Page 1- 4)
D. Forest Location (Page 1- 7)
E. Public Issues and Management Concerns (Page 1- 8)
F. Overview of Later Chapters (Page 1-24)

A. NATURE OF THE DECISION

The Forest Service has completed a land and resource management plan for the Allegheny National Forest (the Forest) as required by the Forest and Rangeland Renewable Resource Planning Act of 1974, as amended. The purpose of this land and resource management plan (called more simply, the Forest Plan) is to provide for multiple use and a sustained yield of goods and services from National Forest System lands. This must be done in a way that maximizes long-term net public benefits in an environmentally sound manner.

The overall long-term value to the nation of all outputs and positive effects (benefits) to be provided through the Forest Plan less all associated inputs and negative effects (costs) are its net public benefits.

The reader must judge whether the preferred alternative (Forest Plan) provides greater net public benefits than do the other alternatives described in this document. This is because what may be a benefit to one person may be a cost to another, and because net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index.

The Allegheny National Forest has many resources for which there are competing demands. These resources include timber, water, wildlife, wilderness, outdoor recreation, minerals, and scenery. The Forest Service must decide how to provide the maximum net public benefits from these resources in an environmentally sound manner. In doing so, the goods, services, and positive environmental effects must be weighed against the dollars required and negative environmental effects.

B. FOREST PLANNING DOCUMENTS

This FEIS describes a range of alternatives considered for providing net public benefits and discloses the significant environmental effects of the alternatives. Each alternative could be the basis of a Forest Plan, and each addresses the management problems described below. Only one of the alternatives has been identified as the preferred alternative. This alternative has been further developed and described in a separate companion document titled "Allegheny National Forest Land and Resource Management Plan (the Forest Plan)."

The Forest Service prefers Alternative D, which is the basis for the Forest Plan. The role of the Forest Plan is to guide all natural resource management activities of the Allegheny National Forest. The Forest Plan focuses on the decade from 1986 to 1995. The Forest Plan will be revised in 10 to 15 years or whenever conditions or demands have changed significantly. The contents of the Forest Plan are as follows:

- A summary of the current management situation
- A description of the goals for managing the Forest
- The management prescriptions that will guide use of the management practices needed to achieve the desired conditions within each management area of the Forest
- The monitoring and evaluation requirements

While the Forest Plan covers the next 10-15 years, the Final EIS analyses each alternative over a period of 50 years or longer in order to determine their long-term environmental effects. The Forest Plan addresses the environmental effects that will result from meeting the Forest goals and objectives and provides information on the budget requirements for carrying out the schedule of work described in the Plan.

C. FOREST PLANNING PROCESS

Forest planning takes place within the overall framework provided by these implementing laws and regulations:

- The Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA) - Title 36, Code of Federal Regulations, Part 219
- The National Environmental Policy Act (NEPA) - The Council on Environmental Quality Regulations, Title 40, Code of Federal Regulations, Part 1500.

National (RPA), Regional, and Forest planning form an integrated three-level planning process. The process requires a continuous flow of information and management direction among the three Forest Service administrative levels. Information from Forest planning flows upward to the National level for use in the RPA program, where in turn information flows back to the Forest level. In this structure, Regional planning is a principal process for conveying information between the Forest and National levels.

The National RPA program recommends resource output levels to be achieved by Forest Service programs. The RPA program displays each Region's share of the National program in terms of output targets and associated budgets. These RPA resource targets represent the benefits that are sought by society at a National level.

Each Region tentatively distributes its share among its National Forests by displaying them in a Regional Guide. The Regional Guide also establishes, as standards and guidelines, the minimum requirements for management practices in order to assure that Forest Plans are responsive to both National and Regional issues and concerns about the benefits sought by society. Regional standards and guidelines will govern the management practices used by the Forests. The RPA resource targets are not binding on individual Forests, but they are one set of resource targets that must be considered.

Forest planning considers a range of alternatives in terms of how to provide the most public benefits, including those sought at the local level. At least one of the alternatives considered must respond to and

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incorporate the tentative RPA objectives, thus assuring that Forest planning considers the benefits to the general society [36 CFR 219.12(f)(6)]. Regional standards and guidelines incorporated into Forest planning assure response to benefits sought at the Regional level.

The planning process specified in the implementing regulations of NFMA was followed while developing the Forest Plan. The planning process uses an interdisciplinary approach to develop the plan and the alternatives to it (36 CFR 219.5). The planning steps described in the regulations [36 CFR 219.12(b)-(k)] and used in this Forest planning process are the following:

- Identification of Purpose and Need
- Development of Planning Criteria
- Inventory Data and Information Collection
- Analysis of the Management Situation
- Formulation of Alternatives
- Estimation of Effects of Alternatives
- Evaluation of Alternatives
- Preferred Alternative Recommendation (Proposed Plan)
- Plan Approval
- Monitoring and Evaluation of the Forest Plan.

The results of planning Steps 1-8, above, are described in this document, except that the criteria (Step 2) used to guide the process are a part of the planning records. Refer to Appendices A and B for more detail on the results of these steps. Appendix A covers the identification of issues and concerns, management problems, and consultation done with the public (Step 1). Appendix B covers Steps 2-8.

The Allegheny NF solicated public review and comment on the Draft Environmental Impact Statement (DEIS) and Proposed Forest Plan from January 25, 1985, to April 29, 1985. All public comments received during the comment period were reviewed and analyzed by the Forest ID Team.

This Final Environmental Impact Statement (FEIS) responds to the public comments on the DEIS and is filed with the Environmental Protection Agency (EPA). The Regional Forester will use this FEIS in making a decision on the Forest Plan. This decision is

documented in the accompanying Record of Decision. The decision documented in the Record of Decision is subject to administrative review (appeal) in accordance with the provisions of 36 CFR 211.18.

The Forest Plan will then be implemented, subject to changes made in response to appeals, if any. Monitoring and evaluation (Step 10) will be done at intervals established in Forest Plan, Chapter 5.

The Forest Plan replaces all previous resource management plans prepared for the Allegheny N.F. Upon final approval of the Forest Plan, all subsequent activities affecting the Forest, including budget proposals, are required to be in compliance with the Plan in accordance with 36 CFR 219.10(e). In addition, all permits, contracts, and other instruments for the use and occupancy of National Forest System lands must be in conformance with the Forest Plan as required in 16 USC 1604(i).

This Final EIS prepared for the Forest Plan will be used in future environmental analysis and in environmental documents through tiering in accordance with 40 CFR 1502.20 and 1508.28. Tiering means that environmental analyses and documents prepared for projects arising from the Forest Plan will refer to the EIS, Forest Plan, and associated documents rather than repeat information. Environmental analyses for specific projects will, therefore, be shorter and will concentrate on issues unique to the project.

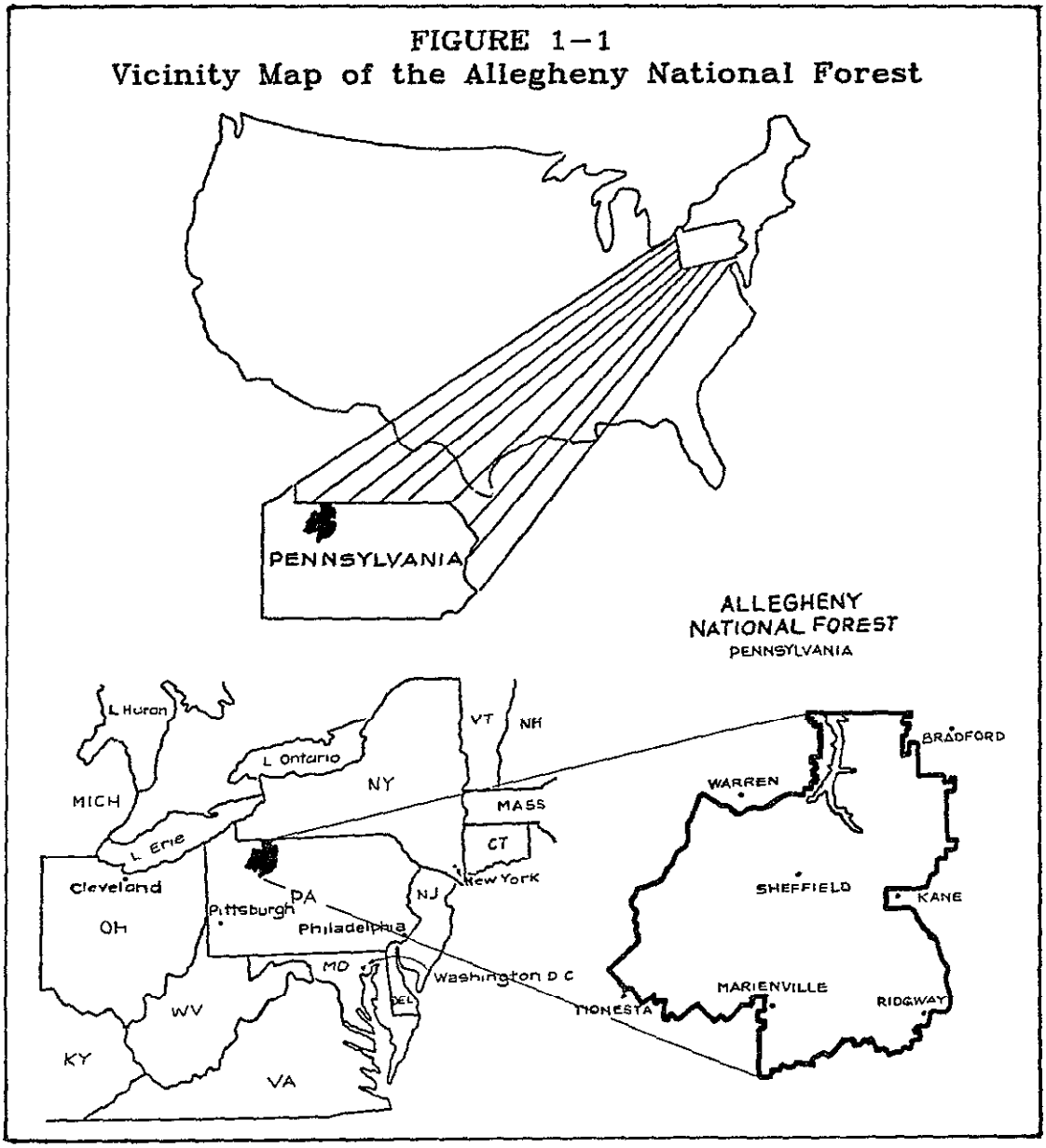
All of the documents, files, and other planning records that chronicle the planning process are available for inspection during regular business hours at the Allegheny National Forest Supervisor's Office, 222 Liberty Street, Warren, Pennsylvania 16365. These planning records list information used and decisions made while developing the Forest Plan as required in 36 CFR 219.10(h). The major references used in this planning process are listed in Chapter 8. Other information that will help the reader understand this FEIS can be located by referencing the Table of Contents and the Index in Chapter 7.

Readers may wish to save their copies of this Final EIS and Forest Plan. There may be supplements and amendments to them. These will be made if necessary to respond to changing conditions or to improve management direction.

D. FOREST LOCATION

The Allegheny National Forest is located in Northwestern Pennsylvania in Elk, McKean, and Warren Counties and has 510,530 acres (including water area). The Forest is within a day's drive of Cleveland, Pittsburgh, Philadelphia, Washington, DC, and New York City. Principal access routes are Interstate 79 from the south, Interstates 80 and 90 and U.S. 6 from the north, east, and west.

FIGURE 1-1
Vicinity Map of the Allegheny National Forest



Forest Location

E. PUBLIC ISSUES AND MANAGEMENT CONCERNS

Public issues were identified through various types of citizen participation including public meetings, comment forms, and individual contacts. Issues submitted by the public, as well as concerns from within the Forest Service, helped the Forest to assess the necessity for changing the current management of the Allegheny National Forest. These public issues and Forest Service concerns did confirm the need for change and also guided the Forest Service in preparation of the EIS and accompanying Forest Plan. All the planning steps are responsive to the issues and concerns identified.

Some issues were thought to be beyond the jurisdiction of the Forest Service, adequately covered in existing plans or laws, or best handled case-by-case in site-specific evaluations. These issues are not addressed in the Forest Plan and EIS. The remaining issues, which indicated a need to change current management direction, were then grouped into six topics of primary importance called management problems. A management problem is a statement expressing conflicting values about management of the Forest or the outcomes desired of Forest management.

See Appendix A for a detailed explanation of the process used to identify issues and concerns, a list of them, and their disposition.

MANAGEMENT PROBLEMS

The management problems guided the formulation of alternatives. While one specific alternative may provide the "best" response to a single problem, each alternative satisfies all problems to some degree. The difference between the "best" response and that provided by some other alternative involves recognizing trade-offs in the degree to which they respond to all of the problems. This is necessary in order to determine overall public benefit. The management problems are summarized in the rest of this chapter.

Each management problem statement includes a brief historical background. Each also includes a summary of the opportunity to address the problem through Forest planning.

A more detailed description of how management problems were developed can be found in Appendix A. Detail on the benchmark analyses made in support of the opportunity statements can be found in Appendix B, Page 123.

PROBLEM 1 Providing Developed Recreation

Recreation on the ANF is an important public benefit. During the 1960's, recreation opportunities expanded rapidly with construction of the 12,000-acre Allegheny Reservoir and its modern national forest campgrounds and boating facilities.

Currently, these campgrounds around the reservoir are often full, and on most summer weekends boating facilities are busy, although not crowded. More rustic campgrounds elsewhere on the Forest have fewer campers, but these campers are those who value their solitude. Only one national forest campground is available along the Clarion and Allegheny Rivers, or along Tionesta Creek. Private, state, and Corps of Engineers campgrounds are also located along these rivers and this creek.

People do disagree about the need for new campgrounds -- either modern or rustic -- or for additional boating facilities. They also disagree about whether these facilities should be financed by the Allegheny National Forest or by private investors.

Allegheny Reservoir

Some citizens believe that the reservoir can accommodate even more modern campgrounds and boating facilities. They believe that more development should occur and that the scenic beauty can be retained if development is carefully planned. Development would create new jobs, raise local income and revenues, and satisfy users who prefer comfortable, modern campgrounds.

Other citizens believe that the undeveloped character of the reservoir is unique in the Eastern U.S. and that its scenic qualities should be preserved.

Allegheny and Clarion Rivers and Tionesta Creek

Boating and fishing on these streams is increasing, but public boating access points and campgrounds are not always available along the streams.

Public or Private Financing of Recreation Facilities

Historically, the Allegheny NF has financed construction of all recreation facilities and has operated most facilities, except for the marina on the Allegheny Reservoir. In the future, however, private corporations may become involved in the construction and the operation of both existing and planned recreation facilities.

Opportunity for Resolution

Analysis indicates an opportunity to more than triple the potential for recreation use, particulary from the Allegheny Reservoir, Allegheny and Clarion Rivers, and Tionesta Creek. Projected demand for facilities, such as campgrounds, boat access, and rustic resorts, can be met, but meeting the demand would require capital investments in facilities. This could be accomplished with public funds, private capital, or some mix of the two.

PROBLEM 2 Providing Dispersed Recreation Opportunities

Dispersed recreation includes hiking, hunting, fishing, berry picking, bird watching, and photography. These activities usually depend upon solitude and a natural-appearing forest, so unnecessary roads and trails, as well as unsightly timber harvests, are likely to annoy members of the public who are interested in these dispersed recreation activities.

Because of increased timber harvesting and oil and gas development, vehicular access to the Forest has increased. With this access, opportunities are declining for those who prefer forested areas which offer solitude, few encounters with other forest users, and natural-appearing landscapes.

Alternatively, many people engaged in other dispersed activities, including trailbikers, snowmobilers, and some hunters and fishermen, often rely on roads and trails when they visit the Forest. They do not venture far from their vehicles, and meeting other Forest visitors may even increase their satisfaction. For them, many roads and trails are crucial to their enjoyment of the Forest.

Opportunity for Resolution

Analysis reveals that demand exceeds supply for all levels of dispersed recreation activity.

Opportunities for recreation in a setting of solitude, free from human disturbance, are limited because of the extensive road system and oil and gas development. Conflict between desires for motorized and non-motorized activities will continue in the future.

PROBLEM 3 Timber Management

Timber on the Allegheny NF is a valuable economic resource, especially the many stands of high-value black cherry trees. Actually, the Forest contains a significant portion of the world's supply of black cherry, so timber harvests are economically important. Historically, however, much of the timber on the Forest was harvested in the late 1800's and early 1900's. Most of the timber on the Forest will be mature and ready for harvest during the next two to three decades.

The first management question, then, is what timber volume to harvest during each decade. The second question is how to guarantee that seedlings replace trees harvested. Currently, seedlings are often destroyed from competition with dense understories of fern/striped maple and from the many deer that eat seedlings.

Timber Volumes

The National Forest Management Act directs each national forest to provide total timber volumes that do not decline from one decade to the next. Yet because most timber on the Forest is close to mature, timber sale volumes may decline if large volumes are harvested all at once when trees are financially mature (60 to 90 years old). Actually, other management strategies are open to the Allegheny NF. For aesthetic reasons, the Allegheny NF could allow trees to grow beyond their financial maturity to a maximum of 120 years old. Such large trees may enhance the appearance of the Forest, but

the delay in harvesting would decrease financial returns. The Forest could maintain non-declining sawtimber volumes, yet still allow total timber volumes (sawtimber plus lower-quality pulpwood) to fluctuate.

Understory Problems

Before trees can be harvested, managers must be assured that seedlings will replace the harvested trees. Two related problems frequently prevent new seedlings on the Forest from replacing harvested trees.

First, deer populations have remained unacceptably high for a long period of time. Because the deer eat tree seedlings, shrubs, grasses, forbs, acorns, and other types of mast, their selective feeding has altered the natural vegetation on the floor of the forest. They frequently eat enough tree seedlings to prevent the establishment of young trees. Seedlings can be protected from deer by fencing and other control measures, but the costs are very high.

Second, an estimated 50 percent of the forest floor on the Allegheny NF is covered with a dense understory of fern and striped maple. On these acres, this understory, combined with excessive deer browsing, is sufficient to prevent the growth of black cherry seedlings and other desirable seedlings.

Applying herbicide is the most effective technique for controlling understory vegetation. It works on all target species, is cost effective, and meets soil, water, health, and safety objectives. Alternatively, if the number of deer decreased, seedlings might be able to grow through the ferns and striped maple, and no herbicide would be necessary.

Opportunity for Resolution

Analysis reveals that the level of timber harvest on the Allegheny National Forest could increase to more than double the current harvest level. This higher volume of high-quality hardwood sawtimber which could be produced on the Forest would likely be

sold. Domestic and international markets for hardwoods, such as black cherry and oak, will remain strong. The demand for pulpwood is expected to remain substantially less than what can be provided from the Forest.

Analysis also indicated that the level of timber harvest and the methods for managing timber are directly related to other management problems, such as access for dispersed recreation and provisions for wildlife habitat.

PROBLEM 4 Wildlife Habitat

The U.S. Forest Service can legally manage only the habitat in which animals live. The State of Pennsylvania is responsible for directly controlling animal population levels.

Historically, the Allegheny NF has relied chiefly on timber harvests to manage vegetation for wildlife. The regeneration harvest method known as clearcutting allows the regeneration of vegetation crucial for animals requiring young vegetation. As a result, hunters have enjoyed high populations of the white-tailed deer.

Recently, the wildlife habitat improvement program has expanded. Management now is emphasizing habitat improvement for game species -- turkey, deer, and grouse.

Wildlife concerns are three-fold: (1) deer populations which exceed the capacity of the land to support them, (2) more roads and trails into prime habitat, and (3) level of management emphasis for small-game and non-game species.

Deer Populations

As mentioned in the Timber Management Problem, deer populations on the Allegheny NF currently exceed the land's carrying capacity. For lack of food, deer are small and have poor antler development. Deer also eat so many tree seedlings that expensive measures, such as fencing, must be used to protect seedlings until they grow above the deer's reach.

Finally, deer have modified the natural understory of the forest, and wildlife species, such as rabbits, dependent upon a rich variety of understory vegetation have declined.

The Allegheny NF and the Pennsylvania Game Commission have agreed to limit levels for deer, and progress is being made towards achieving these population levels.

Once the deer populations are stabilized at these lower levels, recovery of the understory vegetation may still take twenty to thirty years.

More Roads and Trails

Roads and trails associated with timber harvests and oil and gas developments have significantly opened up prime wildlife habitat. Such access allows animals to be disturbed during breeding seasons and to be hunted extensively during hunting seasons. Such disturbances are particularly bad for some species -- for instance, the wild turkey. (These wildlife impacts are in addition to those that detract from dispersed recreation, as discussed in Management Problem 2 - Providing Dispersed Recreation).

Small-game and non-game emphasis

Some citizens would like the Allegheny NF to increase management emphasis on rabbits, squirrels, and grouse, as well as such non-game animals as songbirds and hawks. They are also concerned about increasing the number of black cherry trees on the forest and their effect on habitat for small-game and non-game.

Opportunity for Resolution

Analysis shows that providing for future wildlife habitat depends on diversity of vegetative conditions and on road access and road use. Timber harvesting is the most effective method for influencing future changes in wildlife habitat. Analysis also shows that opportunities for timber harvesting are more than enough to meet desired regeneration acreages.

There are several alternative methods for financing wildlife habitat improvement projects: federal money, volunteer work, and cooperative work completed on the Allegheny National Forest by the Pennsylvania Game Commission. Another approach we are proposing in some of the alternatives is a hunting and fishing stamp, purchased with the Pennsyvlania hunting and fishing license, for those who intend to hunt or fish on the Allegheny National Forest. The revenues from the stamp would finance wildlife and fish habitat improvement, stocking programs, census taking, and law enforcement on the Allegheny, allowing the users rather than the taxpayers to pay a substantial part of the bill. (Since this is more of a political issue and the Allegheny has little control of the outcome, we did not include any revenues from this proposal in the economic analysis for the two alternatives which include it.) The discussion in Chapter 2 briefly discusses the approach for each alternative.

PROBLEM 5 Private Oil and Gas Development

This nation's oil industry began one hundred and twenty-five years ago within a few miles of the Allegheny NF. Extensive oil and gas deposits still underlie the Forest.

To date, ten percent of the Forest's surface area has been developed for oil and gas. The private sector owns nearly 94 percent of all oil and gas rights, and the owner establishes the schedule and timing of development. The Allegheny National Forest encourages mineral resource development and works cooperatively with the owners to reduce surface resource impacts. Some of these impacts may be reduced by relocating a roadway, moving the drilling site, or applying additional road surfacing material.

Public concern about the effects of the development are high. Oil and gas development requires road access which, if done cooperatively with the Forest Service, often results in lower costs for both parties. But the roads disturb wildlife habitat and opportunities for recreation in a natural-appearing forest. If done improperly, oil and gas development can also cause

sediment and chemical pollution of streams and, thus, be harmful to aquatic life and to humans. Development also removes timber land from production during the period of oil and gas extraction.

Opportunity for Resolution

The Allegheny National Forest's policy on private oil and gas development is to foster a spirit of cooperation between the Forest Service and developers. In an atmosphere of cooperation, financial benefits are greatest for both parties and environmental consequences are minimized. Forest standards and guidelines were developed to avoid or mitigate any adverse effects.

In addition to maintaining this cooperative relationship with the oil and gas industry, the Forest also coordinates, as necessary, with State and Federal regulatory agencies. The Pennsylvania Department of Environmental Resources and the U.S. Environmental Protection Agency have primary enforcement responsibilities relating to environmental protection and oil and gas activities.

The Forest predicts the actual rate of oil and gas development may vary between the low and high demand projections, but the average will continue to be closer to high than to low for the next several decades. The Forest Service will not pursue large-scale acquisition of mineral rights. However, the Forest may acquire mineral rights in specific areas to achieve surface management objectives, such as in the Tionesta Research Natural Area, or where Congress directs, such as in Wilderness.

The Forest Service will also continue to work cooperatively with the state and with the U.S. Environmental Protection Agency to ensure waters meet water quality goals.

The Allegheny will mitigate the significant effects of oil and gas development by continuing its education and cooperative approach with the oil and gas industry.

PROBLEM 6 Wilderness Recommendations

For two decades people have debated whether areas of the Allegheny NF should be designated as wilderness. Such a designation, under the Wilderness Act of 1964, would identify as wilderness those areas possessing unique scientific and research value or unique opportunities for solitude and wilderness recreation.

Two national evaluations have investigated potential wilderness areas -- the first Roadless Area Review and Evaluation, now called RARE I, and then the second evaluation, called RARE II. Under RARE II, some 34,358 acres of Forest land were identified as having wilderness potential. Tracy Ridge and the Allegheny River Islands were recommended to Congress for designation as wilderness. Two other areas -- Minister Creek and Hearts Content -- were recommended for non-wilderness. The remaining areas were identified as needing further planning. These RARE II recommendations were never acted on by Congress and based on a recent California lawsuit, the Secretary of Agriculture decided to set aside all RARE II recommendations.

On October 30, 1984, legislation was passed to establish the Hickory Creek and Allegheny Islands Wilderness areas. The legislation also designated portions of the Cornplanter, Tracy Ridge, Allegheny Reservoir, and Allegheny Front as the Allegheny National Recreation Area.

Opportunity for Resolution

Congress has directed that other areas should not be evaluated for Wilderness at this time. The Wilderness issue is thus resolved for this round of planning.

Each Forest Plan alternative was formulated to comply with the legislation.

Table 1-1 Designated Wilderness and National Recreation Areas for the Allegheny

CATEGORY	ACREAGE
Wilderness Areas	
Hickory Creek	9,337
Allegheny River Islands	382
	9,719
Allegheny National Recreation Area[1]	
Allegheny Front	7,424
Tracy Ridge	9,188
Cornplanter	3,012
	23,100

1 The total acreage for the Allegheny National Recreation Area (23,100 acres) includes an additional 3,500 acres adjacent to the major undeveloped areas mentioned.

MAJOR AREAS OF COMMENT AND CONCERN

The following is a summary of the major issues raised during the Forest Plan Public Review Process. This process along with the issues raised and the Forest Service response to each is discussed in the Final EIS-Appendices A and C.

Herbicide Use Issue

All of the alternatives displayed in the DEIS called for ground application of herbicide to treat undesirable fern and striped maple understory vegetation, which inhibits timber regeneration in final harvest and selection cut areas. The amount applied in decade 1 ranged from 16 thousand acres in Alternative D to 46 thousand acres in Alternative E. The issue centers around whether the alternatives provide a wide enough range, as well as what level of use is appropriate in the preferred alternative.

Public comment on this issue can be found on pages C-42 and C-43 of the Final EIS. In summary, some respondents felt we needed an alternative for no herbicide use. For the preferred alternative, some suggested minimal herbicide use, some suggested no herbicide use, while others supported the level proposed. In terms of the number of comments, there were more comments favoring the proposed treatment level than there were opposing it. Those who favored lower use rates expressed concern

about herbicide's effect on Endangered, Threatened, and Sensitive plants as well as on plants which are important for wildlife or aesthetics. One respondent felt we needed to improve the discussion in the DEIS and add a risk or worst case analysis.

The final set of planning documents were modified in several ways to address these concerns. First, Alternative B was modified to reflect no herbicide treatment. This modification is consistent with the philosophy represented in Alternative B, the current situation, since there is not active herbicide spray program on the Allegheny N.F. at this time. Next, we reworked both Chapter 4 of the Final EIS and Appendix D of the Forest Plan to reflect the results of recent studies on the use and effects of herbicides. Our previous writeup had been based on studies done prior to 1982, and there have been several new studies made in 1984-1985.

The Allegheny N.F. herbicide policy is discussed in Appendix D of the Forest Plan. It reads as follows:

> Herbicides will be used to carry out silvicultural prescriptions as indicated in site specific project EA's. This does not, however, preclude the use of other practices (i.e., Planting, Fencing, Mechanical Control, or Fire) if the project EA shows them to be acceptable for existing on-site conditions. In addition, we will consider for future use any new methods of stand regeneration which prove to be safe, economical, and biologically feasible.
>
> This policy is reflected on the Forest Plan Management Direction and will govern our use of herbicides over the current planning period.

Roads Issue

New road construction is planned in each alternative in the Final EIS. Many respondents gave the impression that the ANF has enough roads already, and some suggested closing more roads. Environmental groups asked why road density was not used as an analysis area delineator and expressed concern over the fate of roadless areas and the validity of our economic analysis. Some respondents were unclear as to the intent of our standards and guidelines for road construction and management.

Public comment on this issue is discussed on pages C-33, C-34, C-58, C-72, C-84, C-85, and C-86 of the Final EIS.

The Engineering staff identified the need to describe the newly implemented Traffic Service Level (TSL) concepts in the documents. Since we did not display the amount of temporary roads in the DEIS, this resulted in more road construction being shown as temporary roads become TSL 'D' or system roads.

The Final EIS was revised to clarify our discussions on road density. As a result in Alternative D, 60 percent of our road system will be closed to vehicular use and an additional 21 percent will have restricted use. We have also strengthened Forest Plan Standards and Guidelines relative to temporary and permanent roads. Road management and construction standards are now specified for each management area.

The final planning documents reflect new road mileage figures based on the Traffic Service Level (TSL) concept. This change increased the number of miles of road displayed in the Plan by reclassifying roads previously listed as temporary to low standard TSL D Roads.

Concerning roadless areas, all of the previous RARE II areas, except Minister Valley and Clarion River, are allocated to MA 5 or MA 6.4. No new road construction is planned in either of these areas. Minister Valley and Clarion River have both been allocated to MA 6.1 and management area direction was modified to exclude ORV use and new road construction from both areas.

Land Allocation to Management Areas

The public expressed concern over how the Forest Planning Process allocated land to each management area. Some respondents wanted more semi-primitive recreation, some less; others wanted to see more uneven-aged management. Sportsmen indicated a strong preference for some acreage in Management Area 1. This issue is discussed in detail on pages C-33 through C-36, C-47 through C-50, C-65, and C-73 of the Final EIS.

The Forest Plan was changed to accommodate additional recreation opportunities. We reallocated an additional 7,000 acres to MA 1 and 15,000 acres to MA 6.2. These adjustments were accommodated by reducing our initial allocation to MA 6.1 by 22,000 acres. In addition, 9,000 acres have been allocated to MA 5 and 23,100 acres to MA 6.4 as a result of the Pennsylvania Wilderness Act of 1984.

No changes were made to our land allocations in response to requests for more uneven-aged management. While featured under MA 2, this management practice can be applied to other management areas for visual considerations and in the management of riparian areas and stand inclusions.

Oil and Gas Development

The public expressed both concern and confusion over how the OGM situation was displayed in our documents. Initially, the DEIS talked about two levels of OGM demand and stated the high level would most likely occur. In the remaining documents, however, the discussion focused on the low demand scenario.

The final planning documents have been modified as follows in response to public concern. For further details, see pages C-67 through C-70 and C-72 of the Final EIS.

Expanded our discussions in the FEIS - Appendix B to clarify why it was necessary to use the low OGM demand scenario in FORPLAN for comparing alternatives.

Modified both the Final EIS and Forest Plan to display the results of the high and low rate of development on Alternative D.

Modified Chapter 4 of the Final EIS to show the effects of the high OGM demand variation on Alternative D and estimated the effects on the remaining alternatives.

Off-Road Vehicles

The amount of Off-Road Vehicle (ORV) opportunity did not vary between alternatives in the DEIS. The decisions made in the 1977 ORV EIS were included in each

alternative. Many people were confused as to where ORV use would be permitted, and Forest Plan standards and guidelines were not very clear.

Public comment on this issue can be found on pages C-32 and C-33 of the Final EIS. Our response to these concerns was as follows. First, the Final EIS was revised to reflect a range of ORV development between alternatives. We also added a table to Chapter 4 which showed the mileage of new ORV trail construction by alternative and decade. Next, Forest Plan Management Direction was modified to clearly present the Forest's ORV policy.

Oak Conversion

Allegheny hardwood seedlings are the predominant regeneration in many of the oak stands on Forest. In the DEIS, Alternative D permitted conversion of approximately 40 percent of the oak timber type to Allegheny hardwoods through natural regeneration. Public comment was strongly opposed to this type of conversion. See page C-50 of the Final EIS for additional information.

The Forest Plan was modified to exclude any conversion of oak to Allegheny hardwoods. Some oak will be harvested but only in those situations where oak can reasonably be expected to regenerate. We have retained oak conversion as a viable option in some of the other alternatives displayed in the Final EIS, most notably Alternative C which calls for the conversion of 34,000 acres.

Resort Development

Many private citizens, conservation organizations, hunting and fishing clubs were opposed to development of private resorts on the Allegheny Reservoir. Their concerns focused upon the potentially adverse effects such development could have on the area's semi-primitive setting, fish and wildlife, and aesthetics. Conversely, the local Chamber of Commerce, several businesses, and a few individuals were very supportive of privately-built and operated rustic resorts. They seemed to view these developments as necessary to meet demand for this type of experience, as well as a big plus for the local economy. They were also concerned about maintaining the present character of the reservoir.

This issue is discussed in detail on pages C-24 through C-28 of the Final EIS. In summary, the Forest Service responded to this issue by deleting the Sugar Bay Resort from Alternative D. None of the other alternatives were modified and Alternative D still contains plans to develop a motel and restaurant complex adjacent to the Allegheny Reservoir Marina in Decade 2.

Wilderness/National Recreation Area (NRA)

The public was concerned that the provisions of the Pennsylvania Wilderness Act were not reflected in the DEIS or Forest Plan. In addition, there was concern for the validity of NRA oil and gas standards and guidelines which were much more stringent than those for other areas of the Forest. This issue is discussed in detail on page C-67, C-68, and C-72 of the Final EIS.

The Hickory Creek and Allegheny Islands Wilderness Areas and the Allegheny National Recreation Area are now reflected in all alternatives in the Final EIS. In addition, Forest Plan Management Direction for Management Areas 5 and 6.4 has been changed to reflect the direction contained in the Act.

Research Natural Areas

The public expressed concern that the DEIS did not thoroughly address the availability of potential Research Natural Areas.

Chapters 2 and 3 of the Final EIS were modified to include four new candidate Research Natural Areas. They are:

- Crulls Island (SAF Type 61 and 62)
- Thompson Island (SAF Type 61 and 62)
- Sheffield Compartment 126 (SAF Type 28)
- Muzette Tract (SAF Type 22)

We also modified Forest Plan Management Direction to protect the suitability and/or capability of these areas for RNA designation during their evaluation period.

F. OVERVIEW OF LATER CHAPTERS

The management problems are the key contribution of Chapter 1 to the EIS because they are the threads that tie the subsequent chapters together:

- In CHAPTER 2, ALTERNATIVES, the problems guide the discussion in two ways: (1) they shape the goals of each alternative formulated and (2) they provide ways to compare the benefits provided by each alternative, including the preferred alternative.
- In CHAPTER 3, AFFECTED ENVIRONMENT, the present environmental conditions that will be changed in response to the problems are described.
- In CHAPTER 4, ENVIRONMENTAL CONSEQUENCES, changes in the environmental conditions are identified. These changes will be caused by the management practices planned under each alternative.
- In CHAPTER 5, LIST OF PREPARERS, significant contributors to the FEIS and Forest Plan preparation are listed, along with their credentials.
- In CHAPTER 6, DEIS/FEIS MAILING LIST, organizations and individuals are listed who were consulted during the planning process.
- In CHAPTER 7, INDEX, an index is provided to guide the reader to sections of interest in the FEIS.
- In CHAPTER 8, REFERENCES, a selected bibliography of literature used in preparation of the FEIS and Forest Plan is presented.

CHAPTER 2

Alternatives

CHAPTER 2

ALTERNATIVES

This chapter presents five possible alternatives for the future management of the Allegheny National Forest. One alternative, identified as the preferred alternative, is the basis for the Forest Plan that accompanies this document. Readers can, therefore, judge for themselves which alternative, including the preferred, best maximizes net public benefits.

The role of the Forest Plan is to guide all natural resource management activities on the Allegheny for the next 10-15 years, with the Plan focusing on the period 1986-1995. The Forest Plan will be revised every 10-15 years or earlier if conditions or demands change significantly. The Environmental Impact Statement shows effects projected over 50 years because of the long-term nature of natural resource management. The projections beyond 10-15 years displayed in this chapter and throughout the documents are only for the purpose of showing effects.

The chapter contains the following sections:

A. Overview (Page 2-2)

B. Alternative Development Process (Page 2-4)

C. Alternatives Considered but Eliminated from Detailed Study (Page 2-21)

D. Alternatives Considered in Detail (Page 2-23)

E. Comparison of Alternatives (Page 2-49)

A. OVERVIEW

To respond to the management problems presented in the preceding chapter, a range of alternatives, including the current management situation, was developed.

This chapter describes the process used to develop the alternatives and provides a comparison of the alternatives.

Several portions of this chapter have been extensively revised and expanded to address public comments and internal concerns from the Draft EIS.

Changes made as a result of comments on the Draft EIS include:

- No herbicide use for 15 decades in Alternative B (ref. Final EIS, Appendix C, pages C-42 to C-44);
- Revise Plan and Final EIS to reflect traffic service level concepts; (ref. Final EIS, Appendix C, pages C-84 to C-86);
- Change management area acreage assignments in Alternative D. Add seven thousand acres of Management Area 1 to increase grouse management, removing it from Management Area 6.1. Increase Management Area 6.2 by 15 thousand acres to provide additional SPNM recreation and timber benefits by reducing Management Area 6.1 by 15 thousand acres to compensate (ref. Final EIS, Appendix C, pages C-47 to C-50);
- Provide a comparison between alternatives, using the low oil and gas demand scenario, and then show the effect of high oil and gas demand on activities, outputs, management area allocation, and environmental effects in Alternative D (ref. Final EIS, Appendix C, page C-69);
- Prohibit conversion of Oak in Alternative D (ref. Final EIS, Appendix C, page C-50);
- Add the minerals supply and demand discussion to the planning documents, as well as the information regarding ownership and availability (ref. Final EIS, Appendix C, page C-70);

- Do not develop Sugar Bay resort but plan a new motel/restaurant complex adjacent to Allegheny Reservoir Marina in first decade in Alternative D (ref. Draft EIS, Appendix C, pages C-24 to C-28;

- Revise documents to reflect Wilderness/NRA legislation (ref. Final EIS, Appendix C, pages C-71 thru C-74);

- Discuss RNA's in the Final EIS and propose two of the Allegheny River Islands, the Muzette Area (white pine-hemlock), and a Black Cherry area as RNA candidates (page 2-25).

For a more extensive list of the changes made as a result of comments on the Draft EIS, see Appendix C of the Final EIS.

B. ALTERNATIVE DEVELOPMENT PROCESS

Formulating a range of alternatives is the key planning phase documented in this section. Without a range of alternatives, neither the decison maker nor members of the public can determine which combination of activities on the Allegheny NF best maximizes net public benefits.

Developing alternatives required an orderly analysis process, as summarized in figure 2-1. The process began with the identification of public issues and management concerns. Next, the interdisciplinary team from the Allegheny NF determined the maximum and minimum goods and services available from all Forest land and resources. Finally, public concerns and the available goods and services led the interdisciplinary team to the alternatives--each alternative being a combination of dozens, even hundreds, of decisions about land allocations, management practices, and environmental safeguards. (See Appendix B for further details about the analysis process.)

According to the National Forest Management Act [36 CFR 219.12(e) and (F)], the range of alternatives must be broad. The range is also important because under the National Environmental Policy Act of 1969, a range of reasonable alternatives must be considered. The range of alternatives presented in the Allegheny EIS satisfies both legal mandates.

Benchmarks were used to define the maximum and minimum limits within which benefits can be provided. These limits take into account land capability, projected resource demands, and cost-efficiency. Alternatives that respond differently to each management problem and provide varying amounts of benefits were developed within the limits set by benchmarks.

The term "benefits" is a significant term in alternative development. Benefits are the goods, services, and positive effects provided by an alternative in response to the issues and concerns. They are the results of addressing the management problems.

Figure 2-1. STEPS TAKEN IN ALTERNATIVE DEVELOPMENT

Step 1. Identify Public Benefits

- Analyze issues and concerns.
- Identify benefits desired by the public.
- Define specific management problems.

Step 2. Determine Ability to Supply Benefits

- Determine land capability.
- Develop management prescriptions, including standards and guidelines to mitigate negative environmental effects.
- Estimate future demands for benefits.

Step 3. Determine Range of Benefits and Costs

- Determine minimum and maximum output amounts and their costs from benchmarks.
- Place limits on minimum and maximum amounts of outputs in order to avoid providing too much or too little of any benefit.

Step 4. Determine Need for Change

- Determine current ability to meet demand.
- Identify opportunities to address management problems.

Step 5. Formulate Range of Alternatives

- Eliminate alternatives that are not biologically, physically, or legally feasible.
- Develop alternatives considered in detail to reflect range of benefits and opportunities.
- Select management areas and schedule management practices for each alternative.
- Identify environmental consequences, develop additional standards and guidelines to mitigate adverse effects.

NET PUBLIC BENEFIT

The purpose of the forest planning process is to provide goods and services in an environmentally sound manner so that the public receives the maximum net benefit. Net public benefit is defined as the difference in value between all outputs and positive effects (benefits) and the associated inputs and negative effects (costs) for producing those benefits. Not all benefits and costs have dollar values, but they still must be considered when determining which plan alternative provides the highest net benefit.

Benefits

Providing benefits from the National Forests is a primary goal of multiple use and sustained yield management. The "benefits" portion of the net public benefit definition includes outputs and positive effects. (Effects are discussed later as a separate component of net public benefit.) A major part of determining "benefits" is deciding which outputs have prices or dollar values. This has a significant bearing on the cost-efficiency analysis which is discussed later.

The following categories of benefits are used in forest planning:

- Priced. Benefits which are or could be sold in the market place.

  Market. Outputs which are routinely traded in an established market and return dollars to the U.S. Treasury. These outputs are timber, camping at developed campgrounds, and U.S.-owned minerals.

  Nonmarket. Outputs which are not customarily sold in an established local market and, therefore, do not return dollars to the U.S. Treasury, but to which a dollar value can be assigned. This value represents what a user would be willing to pay. Examples include hunting, fishing, dispersed recreation, and wilderness use.

- Nonpriced. Benefits which do not have available market transaction evidence. There is no reasonable basis for making market value estimates which are comparable to priced output values. Examples are improved habitat for threatened and endangered species, increased vegetative diversity, and increased jobs and income in local economies.

Costs

The direct costs of providing a set of benefits are relatively easy to define. These are the budget expenditures necessary to carry out management activities on the Forest. Detailed descriptions of the costs are included in Appendix B, page 84.

Effects

The definition of net public benefit includes reference to positive and negative effects. Effects are combined into one category for purposes of analysis and comparison in this EIS. Some effects can be measured by use of numbers, but others can only be described in words. For example, the number of acres of a kind of wildlife habitat can be measured, but its overall condition can only be described.

Forest planning attempts to objectively analyze and display alternatives for addressing the management problems. What one person sees as a "positive" effect may be considered a "negative" effect by someone else. Also, the terms positive and negative imply "good" and "bad", which is a matter of personal judgment in many cases.

Therefore, effects are lumped in the rest of this EIS. The effects of the various alternatives are presented, but interpretation of these effects as positive or negative is left for the reader to define.

Arriving at Net Public Benefit

Determination of net public benefit cannot be reduced to a single index. All of the information on benefits, costs, and effects must be combined. Therefore, the decision on which alternative maximizes net public benefit is a subjective determination.

The decision on which alternative provides the greatest net public benefit uses information about cost efficiency, resource tradeoffs, nonpriced benefits, and public preference. Public preference is expressed through the issues and concerns presented in the statements of the management problems. Resource tradeoffs are measured through the level of outputs produced by the alternatives, while nonpriced benefits are measured through a number of indicators.

ROLE OF ECONOMICS IN FOREST PLANNING

Although net public benefit is composed of several parts economics plays an important role in forest planning. A major concern, not only to the Forest Service, but also to the taxpayers, is that the National Forests be managed efficiently. This concern is addressed through the use of cost efficiency.

NFMA requires that "each alternative will present to the extent practicable the most cost-efficient combination of management practices examined that can meet the objectives established in the alternative."

Present Net Value

Cost efficiency is measured through the use of present net value.

Present net value (PNV) is the difference in dollars between anticipated benefits and anticipated costs. A large PNV indicates that taxpayers, as owners of the national forest, could realize a large net return from their investments. A smaller PNV indicates a smaller net return. Since these benefits and costs are realized in the future, their value must be discounted back to the present. For a detailed discussion on the economics of the planning process, see in Appendix B, the section titled Economic Efficiency Analysis (page B-76).

Maximim PNV for an alternative does not necessarily represent the maximum net public benefit. Net public benefit also includes benefits without a dollar value.

Analysis of Cost Efficiency

Each alternative developed for the Allegheny National Forest has a different set of goals and objectives in response to the management problems. Each alternative

consists of the most cost-efficient set of prescriptions needed to meet these goals and objectives. Lower PNV in alternatives represents the economic cost of producing nonpriced benefits and addressing issues and concerns. The decision as to whether the values of these nonpriced benefits are worth their costs is based on the reader's judgment.

The Forest incorporated cost efficiency into the planning process in several places to assure that this requirement was met. Cost estimates were included in the management prescriptions by the interdisciplinary team.

The tentative prescriptions were then screened. Those which were not cost effective, and added no other benefits, were deleted and not used in the analysis. Additional information on the development of prescriptions and their role in the analysis can be found in Appendix B, the section titled The Forest Planning Model, Identification of Prescriptions.

A linear programming technique (FORPLAN) was used to select the most cost-efficient set of prescriptions to meet the goals and objectives of each benchmark and alternative. This was accomplished by selecting prescriptions within each alternative that have the highest net economic priced benefits. This was done while still meeting the other objectives of the benchmark or alternative.

RESOURCE DEMAND

Future demand or consumption estimates were made for the key resource benefits provided by the Allegheny National Forest. The principal finding of this analysis is that the amounts of benefits the Forest could supply are less than the amounts which can be consumed by markets.[1]

Below is the conclusion of the demand analysis for each resource:

Dispersed Recreation	Expected recreation use may double over the next fifty years.

1 A sustained yield of resource benefits over time are assumed.

Developed Recreation	Demand exists for new campgrounds around and access to the Forest's major water attractions (Allegheny River and Reservoir, Clarion River, and Tionesta Creek).
Grazing	Market demand for grazing units on the Forest is nearly non-existent.
Timber	The Forest could increase sawtimber production one to two hundred percent if timber sales are competitive with other supply sources.
Pulpwood	Pulpwood demand is expected to remain below supply in the forseeable future.
Oil & Gas Development	Oil and gas prices are expected to remain relatively high. We predict the level of new oil/gas development will be closer to the high demand projection than to the low.

BENCHMARKS

A benchmark is a reference point that shows the limits of what can be provided from the Allegheny National Forest. The purpose of benchmark analysis in Forest planning is to provide the basis for developing a wide range of reasonable alternatives. Through these limits, the benchmarks show the ability of the Forest to respond to public issues and management concerns that are in the management problems. (See pages 1-9 to 1-18 of Chapter 1.) The benchmarks also provide information on the cost of providing the goods and services from the Forest. (See Appendix B, the section titled Analysis Prior to Development of Alternatives, for more detailed discussions of the benchmarks.)

Benchmark Development

Benchmarks on the Allegheny were developed to display the maximum and minimum levels of outputs and benefits. Two categories of benchmarks have been developed. The first type shows what the level of benefits will be if cost efficiency is the primary criterion. This type is further separated by whether (1) all priced benefits are included, (2) only market benefits, such as timber

volume or developed recreation use are included, or (3) only non-market benefits are included. These benchmarks include numbers 1, 2, 3, and 4.

The second category of benchmarks shows the levels of benefits that can be provided to respond to specific management problems, but retaining cost efficiency as a secondary objective. One problem would be, for example, determining the maximum amount of hardwood sawtimber that can be produced if hardwood timber volume were the only criteria for managing the Forest. This category includes benchmark numbers 5, 6, 7, 8, 9, and 10.

Benchmarks Analyzed

The benchmarks described below were developed for the Allegheny National Forest. Each, except for Minimum Level, emphasizes present net value, with the purpose of producing outputs as cost efficiently as possible. As such, the objectives of each benchmark are accomplished in the most cost-efficient manner.

1. Maximum Present Net Value - Market and Non-Market Outputs Valued - With a Reduced Set of Minimum Management Requirements

The purpose of this benchmark is to determine the most cost-efficient level of production for the Allegheny National Forest when all minimum management requirements are not met. Comparison of this benchmark to benchmark 2 provides an estimate of the trade-offs required to meet minimum management requirements.

The objective of this benchmark is to achieve the maximum present net value of the Forest using a reduced set of minimum management requirements. This is done using both actual dollar returns (market values) as well as dollar values assigned to recreation use, such as hunting or hiking (non-market values).

2. Maximum Present Net Value - Market and Non-Market Outputs Valued - With Minimum Management Requirements

The purpose of this benchmark is to determine the most cost-efficient level of production for the Allegheny National Forest when all minimum management requirements are met.

The objective of this benchmark is to achieve the maximum present net value of the Forest. This is done using both actual dollar returns (market values) as well as using dollar values assigned to recreation use, such as hunting or hiking (non-market values).

3. Maximum Present Net Value - Market and Non-Market Outputs Valued - Delay Herbicide Use

The purpose of this benchmark is to determine the financial and resource effects of delaying herbicide use for twenty years. This benchmark addresses Management Problem 3, Timber Management.

The objective of this benchmark is to maximize present net value using all priced benefits, while not allowing herbicide use for twenty years.

4. Maximum Present Net Value - Market and Non-Market Outputs Valued - High Demand for Oil and Gas

The purpose of this benchmark is to determine the financial and resource effects of the highest expected demand for oil and gas. This benchmark addresses Management Problem 5, Private Oil and Gas Development.

The objective of this benchmark is to maximize present net value using all priced benefits, while using the highest expected demand for private oil and gas development.

5. Maximum Present Net Value - Market and Non-Market Outputs Valued - 100 percent RARE II Wilderness

The purpose of this benchmark is to determine the financial and resource effects of designating wilderness for all areas having wilderness potential. Management Problem 6 is addressed by this benchmark.

The objective of this benchmark is to maximize present net value, while all RARE II areas are allocated to wilderness management.

6. Maximum Present Net Value - Market Outputs Valued

The purpose of this benchmark is to determine the most cost-efficient solution for management of the Allegheny National Forest. This benchmark differs from 1 above in that only priced, market benefits are valued. Benefits, which do not return dollars to the U.S. Treasury, including those derived from private mineral developments, are not considered.

The objective of this benchmark is to maximize present net value using only market values. This provides for the most cost-efficient return of dollars to the Treasury for every dollar spent.

7. Maximum Present Net Value - Market and Non-Market Outputs Valued - Non-Declining Sawtimber Yield

The purpose of this benchmark is to determine the financial and resource effects of requiring non-declining yields of sawtimber volume for 150 years. This benchmark addresses Management Problem 3, Timber Management.

The objective of this benchmark is to maximize present net value using all priced benefits, while maintaining a non-declining yield of hardwood sawtimber.

9. Maximum Present Net Value - Non-Market Outputs Valued

The purpose of this benchmark is to determine the most cost-efficient solution for management of the Allegheny National Forest if only non-market benefits are valued. This benchmark addresses Management Problems 1, 2, and 4.

The objective of this benchmark is to maximize present net value using only the non-market benefits of recreation and hunting. Timber volumes are not valued.

10. Maximum Timber Volume Production For 50 Years

The purpose of this benchmark is to determine the highest level of timber production possible from the Allegheny National Forest. This benchmark addresses Management Problem 3, Timber Management by producing the maximum volume of timber possible.

The objective of this benchmark is to maximize the timber volume harvested over the next fifty years.

11. Minimum Level

The purpose of this benchmark is to determine the level of outputs from the Forest which would be produced by spending the lowest amount of money possible while still protecting the health and safety of users.

The objective of this benchmark is to manage the entire Forest as Management Area 9.1.

12-15. Maximum Recreation Visitor Days by Recreation Opportunity Class

The purpose of these benchmarks is to estimate the maximum number of recreation visitor days which could be provided on the Allegheny National Forest.

Forest Plan Alternative B is considered to be the "Current Situation" benchmark. It is described with the forest plan alternatives.

Range of Benefits That Can Be Provided

The benchmarks show the limits, minimum and maximum, of the resource outputs that can be provided by the Allegheny National Forest. This range of outputs is shown on the following pages as they relate to the management problems.

PROBLEM 1 Providing Developed Recreation Opportunities

The range of capacity in developed recreation areas is shown below in Table 2-1.

The maximum number of new facilities represents the highest number of new facilities which could feasibly be provided and used by the public. The maximum number of facilities which could be financed by the private sector represents facilities which would be large enough to support a profitable business.

Table 2-1 Range of Developed Recreation Opportunities
(Number of New Facilities)

	Range of New Facilities		
New Facilities	Minimum	Maximum	Maximum Number Financed by Private Sector
Allegheny Reservoir			
Campgrounds	0	0	0
Resorts	0	2	2
Forest Areas			
Campgrounds	0	12	2
Resorts	0	0	0
Boat Access	0	5	1
Expanded Facilities			
Allegheny Reservoir			
Campgrounds	0	3	2
Boat Access	0	1	0
Other Forest Areas			
Campgrounds	0	1	0

PROBLEM 2 Providing Dispersed Recreation Opportunities

To display the range of opportunities to address this problem, the maximum and minimum number of recreation visitor days and acres which could be provided in each recreation opportunity class is shown. The maximum number of trail miles which could feasibly be constructed is also shown.

Table 2-2 Range of Dispersed Recreation Use in Decade 5
(Thousands of RVD's)

Recreation Opportunity	Range of Benefits Minimum	Maximum
Primitive	0	0
Semi-Primitive Non-Motorized	0	1,581
Semi-Primitive Motorized	0	16,096
Roaded Natural	0	14,104
Rural	0	0

Table 2-3 Range of Dispersed Recreation Opportunities in Decade 5 (Thousands of Acres)

Recreation Opportunity	Range of Acres Minimum	Maximum
Primitive	0	0
Semi-Primitive Non-Motorized	0	71
Semi-Primitive Motorized	0	503
Roaded Natural	0	503
Rural	0	0

Table 2-4 New Trail Miles in Five Decades
(Miles of Trail)

	Range of New Trail Miles Minimum	Maximum
Pedestrian Trails	0	344
Motorized Winter Trail	0	28
Motorized Summer Trail	0	364

PROBLEM 3 Timber Management

The range of timber production potential for the Allegheny is shown below in Table 2-5. Total timber volume and total sawtimber volume are shown with the requirement of non-declining yield of total timber volume. Total timber volume maximums were obtained from the Maximum Timber Volume Production benchmark (10). Sawtimber maximums were derived from the Maximum Present Net Value - Market Outputs Valued benchmark (6).

Competition from dense fern/striped maple understories and from deer browsing often destroys many seedlings in a stand. In all alternatives, except B, chemical understory treatment will help insure healthy seedling regeneration. To obtain these volumes, the Allegheny National Forest will also fence, and fertilize. Table 2-6 displays the range in amounts of these activities among all the Alternatives and Benchmarks.

Table 2-5 Range of Timber Volume Potential
(Average MMBF/Year)

	Range of Benefits	
	Minimum	Maximum
Total Timber Volume	0	136
Decade 1	0	136
Decade 2	0	136
Decade 3	0	136
Decade 4	0	136
Decade 5	0	136
Hardwood Sawtimber Volume		
Decade 1	0	54
Decade 2	0	78
Decade 3	0	81
Decade 4	0	80
Decade 5	0	90

Table 2-6 Range of Area Fertilized, Fenced, or Treated with Herbicide
(thousands of acres per decade)

	Acres Treated by Each Activity					
	Fertilization		Fencing		Herbicide	
Decade	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	0	51	0	11	0	48
2	0	48	0	8	0	36
3	0	44	0	8	0	37
4	0	31	0	5	0	45
5	0	13	0	4	0	45

PROBLEM 4 Wildlife Habitat

Table 2-7 displays the minimum and maximum number of wildlife user days. Table 4-24 shows the variation in wildlife habitat diversity provided by the Alternatives.

Additional descriptive information follows the table. Chapter 3 (page 3-17) discusses the present vegetative diversity on the Forest.

Table 2-7 Wildlife User Days in Fifth Decade
(Thousands)

Wildlife User Days	Range of Benefits Minimum	Maximum
Big-Game	856	1934
Small-Game	274	584
Non-Game	322	719

PROBLEM 5 Private Oil and Gas Development

Table 2-8 displays the projected maximum and minimum outputs and activities for private mineral development under the low and high demand assumptions. This energy production occurs on National Forest land as mineral owners exercise their private subsurface ownership rights.

Table 2-8 Range of Activities and Outputs for Private Mineral Development on National Forest Land

Decade	Total Number of Producing Wells		Total BBTU Production		Total Value (Million $)	
	Low Demand	High Demand	Low Demand	High Demand	Low Demand	High Demand
1	11,743	19,421	93,454	122,194	370	484
2	11,504	26,859	81,180	170,602	321	676
3	8,722	28,727	56,761	182,441	225	718
4	5,451	24,691	32,498	153,895	129	610
5	3,800	18,691	15,197	108,833	60	431

PROBLEM 6 Wilderness

Each Forest Plan alternative was formulated to comply with the "Pennsylvania Wilderness Act of 1984". This legislation established the Hickory Creek and Allegheny Islands Wilderness Areas (10,000 acres). It also designated portions of the Tracy Ridge, Cornplanter, and Allegheny Front undeveloped areas (23,100 acres) as the Allegheny National Recreation Area.

Cost efficiency - Common to all Management Problems and Benchmarks.

Table 2-9 displays the maximum and minimum economic returns possible from the Allegheny National Forest.

Table 2-9 Economic Returns

Value	Range of Benefits Minimum	Maximum
Present Net Value (Million $)	171	619
Returns to the U.S. Treasury (Thousands $)		
Decade 1	0	37488
Decade 2	0	60564
Decade 3	0	90779
Decade 4	0	107027
Decade 5	0	146695

Role of Benchmarks in Developing Alternatives

Each of the management problems represent some type of conflict on what publics would like to have from the Forest. For example, some people want more motorized recreation, such as snowmobiling or motorcycling. Other people want to have more hiking or cross-country skiing opportunities.

The benchmark analysis showed the limits of the benefits the Allegheny National Forest can provide. These limits set the range within which any one alternative can respond to resource demands.

Benchmark results were used as the starting point to formulate a wide range of alternatives that respond to the management problems. Only one benchmark was not considered further in the planning process:

The Minimum Level Benchmark (11) was not considered because it is not responsive to public issues and management concerns. Minimum level management defines the background values of benefits and costs. It serves as a standard for measurement of other benchmarks and alternatives.

ALTERNATIVE DEVELOPMENT

A range of alternatives shows different ways of responding to the conflicting desires shown in the management problems. Specific objectives for each alternative have been identified, such as acres of certain types of land managed for nonmotorized recreation, the desired diversity of vegetative types, different levels of timber harvest, or the amount of campground construction. Given these objectives, the FORPLAN model selected the most cost-efficient set of management prescriptions to meet the goals and objectives of the alternative. (Modeling assumptions for each alternative are included in Appendix B, Formulation of Alternatives).

Each alternative analyzed satisfies the principle of "integrated resource management." The essence of this principle is that no resource is emphasized to the exclusion or violation of the minimum standards for other resources. For example, all alternatives protect soil productivity, or assure that minimum viable wildlife populations are maintained.

Even though all alternatives consider cost efficiency, the goals and objectives for each are different. Each alternative uses a combination of management prescriptions that produce the highest net economic benefit (the highest difference of benefits minus costs), while still achieving the objectives of that alternative.

Wide Range of Alternatives

Alternatives may show similar levels of a certain benefit, but other benefits may vary widely. For example, the total amount of timber harvested is similar in several alternatives. However, the species harvested and the kinds of wood products provided vary. Comparing the range of alternatives requires careful attention to the detail shown throughout this chapter.

C. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The following alternatives were formulated and considered in the analysis but were eliminated from any further detailed study:

1. An alternative was considered which would provide an equal distribution of timber ages by the end of the planning horizon (150 years). The purposes of achieving equal timber age classes were to: (1) assure a sustained yield of timber volume over time and (2) to provide greater age-class diversity on the Forest for wildlife.

NFMA Rules and Regulations (36 CFR 219.16) specify that each Forest shall provide a non-declining flow of timber volume but may depart from non-declining flow in order to better attain the overall objectives of multiple-use management.

Analysis of timber management strategies showed that achieving equal timber age classes did not assure non-declining timber volume yields. Assuring non-declining yields during the conversion period was not attainable. Thus, the alternative would be considered a "departure" alternative by NFMA definition.

Other alternatives provide a non-declining, even flow of total timber volume without achieving equal timber age classes. Age class distributions for some of the alternatives tend toward an equal distribution. Thus, the alternative was not needed to assure a sustained yield of timber volume, and other alternatives provided adequate amounts of age class diversity to adequately support wildlife needs. Thus, the alternative was not considered further.

2. An alternative was considered which would provide large, natural-appearing areas for semi-primitive recreation opportunities. Timber management would be intensive outside the semi-primitive recreation areas, and timber production would not fall below current levels.

Benefits were estimated for this alternative, and compared to results of the other alternatives. The comparisons revealed that the alternative was not significantly different from alternative A. Dropping this alternative from further study did not narrow the range of alternatives in any resource area. Thus, the alternative was not considered further.

3. Finally we considered a variation of the preferred alternative, which would depart from non-declining, even flow of total timber volume. We had two main reasons for considering this. First, the base sale schedule equals the long-term sustained yield capacity in the first decade. Secondly, the present growing stock volume on suitable lands greatly exceeds that needed in the future forest (4,798 MMBF versus 3,956 MMBF per Table C-5 in the Forest Plan).

However, we decided not to evaluate this variation in detail because we felt it would not be feasible. There are several reason for reaching this conclusion:

-- Thirty thousand acres of final harvest is the maximum acreage we feel we can successfully complete in decade 1 on the 327,000 acres of Management Area 3, given the current effect of deer browsing, understory vegetation, spatial considerations, and restrictions on oak conversion and old growth harvesting;

-- Any significant increase in volume for the first decade would require a significant increase in the final harvest acreage for Management Area 3; and

-- Any significant increase in Management Area 3 acreage would violate the objectives of that alternative.

4. The NFMA planning regulations permit alternatives that could require a change in law or policy in order to respond to public issues. There were no such alternatives needed for the Allegheny National Forest. All issues addressed in Forest planning can be satisfied within the range of alternatives considered in detail in the following section.

D. ALTERNATIVES CONSIDERED IN DETAIL

This section describes the five alternatives considered in detail. These represent different ways of managing the Allegheny National Forest to provide net public benefits. Each of the alternatives considered in detail is a technically and legally feasible strategy of managing the Forest.

All alternatives include consideration for and coordination of all the multiple uses on the Allegheny National Forest. These include timber, soils, water, recreation, wildlife, wilderness, minerals, and human resources. However, some of the specific output levels for the individual uses vary between the alternatives in response to the problem statements.

WHERE TO FIND INFORMATION ABOUT THE ALTERNATIVES

The detailed information necessary to complete a picture of each alternative is found in a number of places in this document. Each alternative is described in the next subsection.

Table 2-10 (page 2-47) shows the acres selected as management areas for each alternative and the land and resource conditions that will result.

A set of maps showing management area locations by alternative are in the map envelope enclosed. These maps are useful in understanding how management area selection changes between alternatives.

Comparisons between alternatives of their priced benefits, quantitative benefits, cost-efficiency, and environmental consequences are helpful in differentiating between alternatives and in judging their net public benefits. These comparisons are made in the last section of this chapter.

The more detailed discussions of the alternatives' environmental consequences found in Chapter 4 are helpful in order to see the basis for the comparisons made in this chapter.

Summary of the Alternatives

Here is a brief description of the alternatives that were considered in detail. These are described in more detail in the following section - The Alternatives in Detail.

Alt. A

- -- Emphasize priced non-market benefits (including hunting, fishing, dispersed recreation, and semi-primitive/wilderness recreation)
- -- High investments in wildlife and fisheries (especially for deer, grouse, and turkey habitats)
- -- More investments in dispersed than in developed recreation
- -- Lower timber production than at present

Alt. B (No Action)

- -- Emphasize priced market and non-market benefits (especially hunting, fishing, and dispersed recreation)
- -- Low investments in wildlife and fisheries (emphasis on deer and turkey habitats)
- -- Roaded-natural recreation settings, as opposed to semi-primitive or wilderness settings
- -- Slight increase in timber production over the present

Alt. C

- -- Emphasize priced market benefits (especially timber, developed recreation, and minerals)
- -- Minimal investments in wildlife and fisheries
- -- Intensive developed recreation investments. Roaded-natural dispersed recreation emphasized with minimal investments
- -- Substantial increase in timber production over the present

Alt. D (Preferred Alternative)

- -- Emphasize priced market and non-market benefits
- -- Moderate investments in hunting and fishing (especially deer and turkey habitats)
- -- Increased investments in developed recreation, but only moderate ones for dispersed
- -- Moderate increase in timber production

Alt. E

- -- Emphasize priced market and non-market benefits
- -- High investments in wildlife and fisheries
- -- High investments in both developed and dispersed recreation, both in roaded-natural and semi-primitive settings
- -- Moderate increase in timber production

THE ALTERNATIVES IN DETAIL

Each of the following alternatives is feasible and could have been further developed as a possible Forest Plan.

Each of the alternatives incorporates the management prescriptions described in Forest Plan Chapter 3. Measures to mitigate potential adverse environmental effects are included in these management prescriptions. A more detailed discussion of mitigation measures can be found in Chapter 4 of this EIS (page 4-123).

Methods for coordinating with private oil and gas development (Problem 5) are addressed the same in all the forest plan alternatives. Thus, methods will not be mentioned in the following sections.

Several candidates RNA's have been identified and will be recommended to the Regional Forester for future evaluation. They are:

- -- Crulls Island (Sycamore/Silver Maple)
- -- Thompsons Island (Sycamore/Silver Maple)
- -- Sheffield Compartment 126 (Black Cherry)
- -- Muzette Tract (White Pine/Hemlock)

Candidate areas were treated the same under each alternative.

Alternative A

Purpose of this Alternative

This alternative emphasizes priced, non-market benefits. Large areas for semi-primitive recreation opportunities are provided. High levels of wildlife investments are made and investments in small and non-game species are substantially increased above current levels. Timber volumes decline slightly below current levels, and growing large trees for sawtimber and veneer is emphasized.

Alternative A is based upon Benchmark 9, Maximum PNV, Non-Market Outputs Valued.

Goals in Response to Management Problems

Providing Developed Recreation Opportunities (Problem 1) - Small developed campgrounds, with less than fifty family campsites, will be constructed throughout the Forest in support of users seeking semi-primitive dispersed recreation opportunities. No new sites will be constructed around the Allegheny Reservoir. Bank fishing access will be increased on the Allegheny Reservoir. Boat launches will be constructed on the Clarion and Allegheny Rivers and Tionesta Creek.

Providing Dispersed Recreation Opportunities (Problem 2) - Manage approximately fifty percent of the Forest to provide high-quality, semi-primitive recreation opportunities. Facilities described under problem 1 will be designed to enhance dispersed recreation use. Several existing low-standard roads will be managed as scenic drives. Many new pedestrian trails will be constructed, largely in the areas managed for semi-primitive recreation. No off-road vehicle opportunities will be provided. Existing motorized trails will be closed. To enhance aesthetics, forest areas under even-aged management will not be harvested until after age 110. Selection management will be used on 20 percent of the Forest.

Timber Management (Problem 3) - Manage the timber resource to produce high-quality, large-diameter hardwood sawtimber and veneer. Allow timber volume to decline from the current situation. Regeneration harvests must occur later than the culmination of dollar value per acre, generally greater than 110 years old. Selection management will be used on 100,000

acres of the Forest. In the first decade, total timber volume will decrease 20 percent from current, and sawtimber volume will decrease 45 percent. Twenty-three thousand acres will receive herbicide treatment in the first decade. No oak stands will be converted to Allegheny hardwoods.

Wildlife Habitat (Problem 4) - Provide the habitat requirements for all species that occur on the Forest to maintain at least minimum viable population levels. Increase hunting opportunities for turkey, deer, grouse, and associated species. Key habitats will be improved for turkey, deer, and grouse. Manage 11,000 acres intensively for grouse. Endangered, threatened, and species of special concern will receive special emphasis to protect them and enhance their habitat. Habitat for other non-game species will be managed at a moderate intensity level. Fisheries management will be intensive. Habitat improvements will be extensive in warm and cold water fisheries. Additional access will be provided to increase shoreline fishing on the Allegheny Reservoir. The Forest Service will recommend adoption of a hunting and fishing stamp to help finance these increase investments.

Wilderness (Problem 6) - 9,719 acres designated Wilderness and 23,100 acres designated National Recreation Area.

Significant Results of Alternative A[1]

Present Net Value (M$) Over 150 Year Planning Horizon	506370
Returns to Treasury in 1st Decade (M$)	19650
Annual Budget in (M$) 1st Decade	5788
Payment to Counties in First Decade (M$)	11129
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	10
Semi-Primitive Motorized	296
Roaded Natural	197
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	216
Semi-Primitive Motorized	9794
Roaded Natural	7784
Rural	2910
New Campgrounds	8
Expanded Campgrounds	1
Rustic Resorts	0
Miles of New Trails (20 yr)	
Pedestrian	164
Motorized Winter	0
Motorized Summer	0
Boat Launches	5
Information Centers	0
Timber Harvest	
Sawtimber 1st Decade MMBF	197
Total Volume 1st Decade MMBF	489
Long-Term Sustained Yield MMBF/Yr	49
Big-Game Wildlife User Days in 5th Decade M WFUD's	1471
Small-Game Wildlife User Days in 5th Decade M WFUD's	450
Non-Game Wildlife User Days in 5th decade M WFUD's	746
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1 M Acres	35
Acres of Wilderness M Acres	10
Acres of National Recreation Area M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

Alternative B (Current Situation)

Purpose of this Alternative

Alternative B portrays the effects of current management direction on priced and non-priced resource outputs, economic efficiency, and the ability of current management to meet resource demands and address the management problems. The amount of current management activities and benefits are based upon averages of the recent past and, in some cases, upon RPA targets for future projections. The primary objective in developing the alternative was to project current management's activities and benefits into the future. Management area assignments for this alternative will, therefore, not necessarily resemble current land conditions.

The Current Direction Alternative is the only one that will continue the combined management emphasis now in use on the Allegheny National Forest. As such, Alternative B is the "no action" alternative required by the National Environmental Policy Act of 1969.

Alternative B emphasizes priced market and non-market benefits. No new recreation facilities are planned and the majority of the Allegheny is in a roaded-natural condition. Small increases in timber volume are provided over the next several decades. Wildlife investments are directed primarily at deer and turkey.

Alternative B is also considered a benchmark.

Goals in Response to Management Problems

Providing Developed Recreation Opportunities (Problem 1) - Maintain existing recreation developments to provide high-quality recreation experiences. No new campgrounds will be constructed. One new boat launch will be constructed on the Allegheny Reservoir. Existing scenic drives will be maintained. No new boating access sites will be provided on rivers or streams.

Providing Dispersed Recreation Opportunities (Problem 2) - Manage fifty to sixty percent of the Forest to provide high-quality recreational experiences in a roaded-natural setting. Few new pedestrian trails will be constructed. Complete the current planned off-road vehicle trail system.

Timber Management (Problem 3) - Slightly increase annual timber sale volumes to meet the 1980 RPA targets. To meet Forest Service commitments to state agencies, even-aged final harvest acres will exceed 2,000 acres per year. Revenues and financial efficiency are secondary to harvesting at a rate needed to balance age classes. Oak stands will not be converted to Allegheny hardwoods. Twenty-five thousand acres will receive herbicide treatment in the first decade.

Wildlife Habitat (Problem 4) - Provide the habitat requirements for all species that occur on the Forest to maintain at least minimum viable population levels. Increase and improve the key habitats for deer, turkey, and associated species. Investment levels for wildlife management will be low, with minimal investment to improve habitat for small-game, non-game, indicator species, and species of special concern. Most habitat projects will be associated with timber sales. Trout streams and the Allegheny Reservoir will receive moderate intensity fishery management. No additional shoreline fishing will be provided around the Allegheny Reservoir. The Forest Service will not propose a hunting and fishing stamp.

Wilderness (Problem 6) - 9,719 acres designated Wilderness and 23,100 acres designated National Recreation Area.

Significant Results of Alternative B[1]

Present Net Value (M$) Over 150 Year Planning Horizon	439528
Returns to Treasury in 1st Decade (M$)	21540
Annual Budget in (M$) 1st Decade	4968
Payment to Counties in First Decade (M$)	11294
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	11
Semi-Primitive Motorized	220
Roaded Natural	272
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	248
Semi-Primitive Motorized	5319
Roaded Natural	7417
Rural	2910
New Campgrounds	0
Expanded Campgrounds	0
Rustic Resorts	0
Miles of New Trail (20 yr)	
Pedestrian	7
Motorized Winter	22
Motorized Summer	291
Boat Launches	1
Information Centers	0
Timber Harvest	
Sawtimber 1st Decade MMBF	264
Total Volume 1st Decade MMBF	623
Long-Term Sustained Yield MMBF/Yr	62
Big-Game Wildlife User Days in 5th Decade M WFUD's	1212
Small-Game Wildlife User Days in 5th Decade M WFUD's	500
Non-Game Wildlife User Days in 5th decade M WFUD's	393
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1 M Acres	20
Acres of Wilderness M Acres	10
Acres of National Recreation Area M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

Alternative C

Purpose of this Alternative

This alternative emphasizes priced, market benefits and high levels of income to the U.S. Treasury. To generate income, many new modern campgrounds and several rustic resorts are planned around the Allegheny Reservoir and the river corridors. Timber production is substantially increased above current levels. Wildlife investments are minimal unless developed by volunteer groups.

Alternative C is based upon Benchmark 6, Maximum PNV, Market Outputs Valued.

Goals in Response to Management Problems

Providing Developed Recreation Opportunities (Problem 1) - Through a combination of private sector and Forest Service investments, construct and manage recreation facilities to obtain optimum returns to the U.S. Treasury. This alternative provides the greatest increase in developed recreation capacity. New campground complexes are proposed on the Clarion, Allegheny, and Tionesta Rivers. Also proposed on the Reservoir is the expansion of Dewdrop, Webbs Ferry, and Willow Bay into recreation complexes which provides a wide variety of experiences and construction of recreation resorts at Kiasutha and Sugar Bay. Private corporate financing would be sought for four of the larger campgrounds and the two resorts. Existing scenic drives will be maintained. Bank fishing areas will be developed near campgrounds and resorts. Boat launches will be constructed on Clarion River and Tionesta Creek.

Providing Dispersed Recreation Opportunities (Problem 2) - Manage nearly all of the Allegheny to provide high-quality dispersed recreation in a roaded-natural setting. Dispersed recreation is managed to enhance opportunities for campground and resort visitors. Aesthetics are of primary concern around developed recreation areas. New pedestrian trail construction will be concentrated near developed recreation areas. The off-road vehicle trail system will also be expanded.

Timber Management (Problem 3) - Manage the timber resource to secure maximum financial value while maintaining a non-declining volume of high-quality hardwood sawtimber and total timber volume. Quantities of timber volume will increase substantially above current levels. Sawtimber volumes and total timber volume will not decline from one decade to the next. Even-aged management will be used almost exclusively with rotation ages set at financial maturity (80-100 years). Some oak stands may be converted to Allegheny hardwoods. Twenty-eight thousand acres will receive herbicide treatment in the next ten years.

Wildlife Habitat (Problem 4) - Provide the habitat requirements of all species that occur on the Forest to maintain at least minimum population levels. Increase and improve key habitat for deer, grouse, and associated species. Investment levels of wildlife management will be low, with habitat management occurring as a result of coordination with the timber sale program. Volunteer groups will be utilized to developed wildlife habitat. The Forest Service will recommend adoption of a hunting and fishing stamp. With adoption of a hunting and fishing stamp, habitat management efforts will expand to include small-game, non-game, indicator species, and species of special concern. Fishery management in the Allegheny Reservoir will be moderate. Other fisheries will be protected but receive no management emphasis.

Wilderness (Problem 6) - 9,719 acres designated Wilderness and 23,100 acres designated National Recreation Areas.

Significant Results of Alternative C[1]

Present Net Value (M$) Over 150 Year Planning Horizon	521009
Returns to Treasury in 1st Decade (M$)	34615
Annual Budget in (M$) 1st Decade	6523
Payment to Counties in First Decade (M$)	17768
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	15
Semi-Primitive Motorized	76
Roaded Natural	412
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	245
Semi-Primitive Motorized	2164
Roaded Natural	9509
Rural	11095
New Campgrounds	4
Expanded Campgrounds	3
Rustic Resorts	2
Miles of New Trail (20 yr)	
Pedestrian	3
Motorized Winter	22
Motorized Summer	213
Boat Launches	2
Information Centers	1
Timber Harvest	
Sawtimber 1st Decade MMBF	535
Total Volume 1st Decade MMBF	1026
Long-Term Sustained Yield MMBF/Yr	103
Big-Game Wildlife User Days in 5th Decade M WFUD's	1313
Small-Game Wildlife User Days in 5th Decade M WFUD's	521
Non-Game Wildlife User Days in 5th decade M WFUD's	323
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1 M Acres	17
Acres of Wilderness M Acres	10
Acres of National Recreation Area M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

Alternative D (Preferred Alternative)

Purpose of this Alternative

This alternative emphasizes both priced market and non-market benefits. Many new campgrounds, boat launches, and a motel/restaurant complex are planned along the Forest's water attractions. Several large areas will offer high-quality, semi-primitive recreation opportunities. Timber production is slightly increased above current levels. Moderate levels of wildlife investment will be made to emphasize game species.

This alternative is the Forest Service's preferred alternative.

Alternative D is based upon Benchmark 2, Maximum Present Net Value - Market and Non-Market Outputs Valued, with Minimum Management Requirements.

Goals in Response to Management Problems

Providing Developed Recreation Opportunities (Problem 1) - Increase recreation opportunities through a combination of private sector and Forest Service investment. Facilities needed to provide a full spectrum of opportunities are added at Dewdrop and Willow Bay on the Reservoir. New small-scale campgrounds and boat launches are constructed along the major river corridors. A new motel/restaurant complex will be developed along Route 59, adjacent to the Allegheny Reservoir Marina. This facility would include a restaurant, gas station, motel units, and RV campsites. Private corporate financing would be sought for the new campground at Tionesta (Hopkins) and the motel/restaurant complex. Existing scenic drives will be maintained. Bank fishing areas will be developed around the Allegheny Reservoir.

Providing Dispersed Recreation Opportunities (Problem 2) - Manage for high-quality recreation opportunities in a variety of settings. Large areas for semi-primitive recreation opportunities will be provided. Small campgrounds will enhance dispersed recreation opportunities. The remainder of the Forest will be managed to provide roaded natural recreation opportunities. New pedestrian trails will be constructed, primarily in the semi-primitive recreation areas and around campgrounds. The off-road vehicle system will be expanded to double the existing mileage.

Timber Management (Problem 3) - Increase timber volumes above current levels. Emphasize financial returns from production of high-quality hardwood sawtimber. Provide a non-declining yield of total timber volume. First decade sawtimber production will increase 45 percent above the current situation. Even-aged silviculture will dominate and stands will be harvested at a range of ages to achieve a nondeclining yield of total timber volume. Oak stands will only be regenerated if there is a high probability that we can successfully establish oak regeneration. Twenty thousand acres will receive herbicide treatment in the first decade.

Wildlife Habitat (Problem 4) - Provide the habitat requirements for all species that occur on the Forest to maintain at least minimum viable population levels. Increase deer, turkey, and grouse hunting opportunities. Increase and improve key habitats for deer, turkey, and associated species through a moderate level investment program. Manage 7,000 acres intensively for grouse. Endangered, threatened, and species of special concern will receive special emphasis to protect them and enhance their habitat. Specialized habitats and inclusions will be manipulated to benefit small-game, non-game, and indicator species. Adoption of a hunting and fishing stamp will not be recommended. Fishery habitat improvements will be provided at a moderate intensity level.

Wilderness (Problem 6) - 9,719 acres designated Wilderness and 23,100 acres designated National Recreation Area.

Significant Results of Alternative D[1]

Present Net Value (M$) Over 150 Year Planning Horizon	541423
Returns to Treasury in 1st Decade (M$)	26543
Annual Budget in (M$) 1st Decade	7007
Payment to Counties in First Decade (M$)	14477
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	29
Semi-Primitive Motorized	131
Roaded-Natural	343
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	605
Semi-Primitive Motorized	4163
Roaded Natural	10997
Rural	4847
New Campgrounds	6
Expanded Campgrounds	3
Rustic Resorts	0
Miles of New Trail (20 yr)	
Pedestrian	89
Motorized Winter	22
Motorized Summer	290
Boat Launches	6
Information Centers	1
Timber Harvest	
Sawtimber 1st Decade MMBF	383
Total Volume 1st Decade MMBF	945
Long-Term Sustained Yield MMBF/Yr	95
Big-Game Wildlife User Days in 5th Decade M WFUD's	1706
Small-Game Wildlife User Days in 5th Decade M WFUD's	562
Non-Game Wildlife User Days in 5th decade M WFUD's	511
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1 M Acres	24
Acres of Wilderness M Acres	10
Acres of National Recreation Area M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

Alternative D - Sensitivity Analysis

Two variations were made on the preferred alternative to test the sensitivity of management within the alternatives to changes in assumptions. Testing was done after the preferred alternative was selected. The effects are expected to be similar in all alternatives. The two variations on the preferred were (1) reduced budget level and (2) high demand for future oil and gas development. These variations on the alternatives are not only presented to test the sensitivity of assumptions, but are in fact implementable alternatives. The most significant effects of the runs are presented here. For a more detailed analysis, see FEIS Appendix B, Estimating Effects of Benchmarks, Discretionary Constraints, and Alternatives; Section E. Chapter 4 of this document provides details on the environmental effects of the high oil and gas variation. The sensitivity analysis below compares only the FORPLAN results.

Variation D-1, Reduced Budget Levels

Purpose of this Variation

The purpose of this variation on Alternative D, the preferred alternative, was to determine where budget reductions should occur if the total budget was reduced twenty percent below that stated in the alternative. No constraints were put on the budget levels for specific resource areas. Important first-decade constraints on this variation include:

- prescription assignments and FORPLAN constraints were the same as Alternative D
- management prescriptions could not vary significantly from Alternative D
- first decade timber volume must equal that in Alternative D
- the total budget was reduced 20 percent from current budget levels

This alternative could be implemented if federal funding is not available at the amounts specified in the preferred alternative.

Significant Effects of a Budget Reduction

Present net value declined $9 million below Alternative D. The most significant first decade budget reduction occurred in the timber element. To make the budget reduction and still maintain timber volumes, the more expensive but cost-effecient practice of thinning declined and the amount of final harvest increased. The following shifts occurred:

- o total timber volume declined annually by 9 MMBF and sawtimber volume by 3.5 MMBF.
- o acres of thinning declined from 87,000 to 53,000 acres
- o acres of final harvest increased from 30,000 to 44,000 acres
- o timber budget declined $14 million
- o timber revenues declined $27 million

Other effects included:

- o discounted benefits declined in recreation and wildlife by $3 million and $2 million respectively, with insignificant changes in discounted costs
- o acreage in management prescription 6.1 decreased 6,000 acres and management prescription 3 increased 7,000 acres. Insignificant changes occurred in other prescriptions.

The comparison of effects of this sensitivity analysis is shown in the FEIS - Appendix B, Estimating Effects of Benchmarks, Discretionary Constraints, and Alternatives; Section E, Variations on the Preferred Alternative.

The results of the reduced budget run indicate if budgets are reduced in decade 1 by at least 20 percent, the outputs in Alternative D are still attainable. The reduced budget could be absorbed in the timber element, but require a shift in timber management from thinning/final harvest intensities to final harvest intensities.

Variation D-2, High Demand for Oil and Gas Development (D2)

Purpose of this Variation

The purpose of this variation on Alternative D, the preferred alternative, was to determine how sensitive resource outputs and financial indicators are to changes in assumptions about rates of future oil and gas development. All of the forest plan alternatives were developed assuming that the rate of private oil and gas development would be lower than the current situation (see page B-80 of FEIS Appendix B for a discussion of why the low oil and gas demand rates were used). This variation on the preferred alternative assumed that high demand for oil and gas would prevail in the future. The rate of development is similar to the number of wells drilled on the Allegheny during the early 1980's. At that rate of development, approximately 189,000 acres would be supporting high intensity oil and gas developments at the some point during the 150 year planning horizon. In comparison, 65,000 acres are expected to be developed under the assumption of low demand.

Important constraints used in the variation include:

- o prescription assignments and FORPLAN constraints were the same as Alternative D, except for changes needed to model the high demand for oil and gas development.
- o 189,000 acres were required to receive a management prescriptions that are compatible with high intensity oil and gas developments (65,000 acres under low demand).

This alternative could be implemented if the high demand for oil and gas development occurs.

Significant Effects of High Demand for Oil and Gas Development

The most significant economic effects on the surface resources of using the high oil and gas development assumptions are the following (expressed as cumulative benefits or value changes discounted over the 150 year planning horizon):

- $21 million decrease in recreation benefits
- $ 2 million decrease in wildlife benefits
- $30 million reduction in timber benefits
- $46 million decrease in present net value.

The high oil and gas development variation also reflects a large increase in oil and gas production value for the private sector. Table 2-8 in the FEIS displays the total value for oil and gas production under both the low and the high demand projections.

High intensity oil and gas development is not generally considered attractive to recreationists. Thus, recreation use declines and no investments, such as trails, are made within the areas highly developed for oil and gas production. Timber benefits declined because of land occupied by oil and gas equipment and a shift to silvicultural intensities with a lower discounted value.

Wildlife benefits declined due to a drop in big-game hunting use.

The impacts to the surface resources of a high demand for oil and gas development are that recreation and timber benefits will decline significantly, but Alternative D can still be implemented.

Significant Results of (D2) - High Oil/Gas Development Variation[1]

Present Net Value (M$) 524827 Over 150 Year Planning Horizon	
Returns to Treasury in 1st Decade (M$)	31263
Annual Budget in (M$) 1st Decade	8097
Payment to Counties in First Decade (M$)	15473
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	29
Semi-Primitive Motorized	131
Roaded-Natural	343
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	590
Semi-Primitive Motorized	4037
Roaded Natural	9354
Rural	4847
New Campgrounds	6
Expanded Campgrounds	3
Rustic Resorts	0
Miles of New Trail (20 yr)	
Pedestrian	75
Motorized Winter	22
Motorized Summer	291
Boat Launches	6
Information Centers	1

Timber Harvest		
Sawtimber 1st Decade	MMBF	370
Total Volume 1st Decade	MMBF	905
Long-Term Sustained Yield	MMBF/Yr	91
Big-Game Wildlife User Days in 5th Decade	M WFUD's	1509
Small-Game Wildlife User Days in 5th Decade	M WFUD's	538
Non-Game Wildlife User Days in 5th decade	M WFUD's	422
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1	M Acres	24
Acres of Wilderness	M Acres	10
Acres of National Recreation Area	M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

Alternative D (Preferred Alternative)

Alternative E

Purpose of this Alternative

This alternative emphasizes both priced, market and non-market benefits. New campgrounds and rustic resorts are planned. A roaded natural recreation setting will occur on most of the Forest, but significant areas of semi-primitive recreation are provided. To enhance aesthetics, trees are grown to large sizes before harvested. Timber production will increase significantly above current levels. High levels of investment will be made for both game and non-game wildlife species.

Alternative E is based upon Benchmark 2, Maximum Present Net Value - meet Minimum Management Requirements.

Goals in Response to Management Problems

Providing Developed Recreation Opportunities (Problem 1) - Through a combination of private sector and Forest Service investments, increase recreation opportunities for camping, rustic resorts, and boat launches around the major water attractions on the Forest. This alternative will provide the second largest increase in developed recreation capacity. Webbs Ferry, Willow Bay, and Minister Creek would be expanded, new small-scale campgrounds would be added along the river corridors and at major trailheads, a large campground would be constructed on the Allegheny River at Tionesta, and a resort would be constructed at Hodge Run. Private corporate financing would be sought for the new construction at Webbs Ferry, Tionesta, and Hodge Run. Bank fishing areas will be developed near campgrounds and resorts.

Providing Dispersed Recreation Opportunities (Problem 2) - Manage the Allegheny to provide high-quality recreation opportunities in roaded natural and semi-primitive settings. Special emphasis is placed on aesthetics. Trees are grown to longer rotations than present under even-aged management, and selection management will be used on 35 percent of the Forest to enhance scenic qualities. Many new pedestrian trails, trailhead parking areas, and small campgrounds near loop trail areas will provide increased opportunities for dispersed activities. The off-road vehicle trail system will be expanded to more than double the existing mileage.

Timber Management (Problem 3) - Increase timber volumes significantly above the current situation. Emphasize providing large, mature, high-quality sawtimber. Total timber volume will increase 30 percent above the current level. Oak stands can be converted to Allegheny hardwoods. In areas managed under even-aged management, long rotations will be used (minimum age, 110 years old). Selection management will be used on 35 percent of the Forest. A non-declining yield of total timber volume will be provided.

Wildlife Habitat (Problem 4) - Provide the habitat requirements for all species that occur on the Forest to maintain at least minimum viable population levels. Increase deer, turkey, and grouse hunting opportunities and the opportunity to view a variety of non-game species. Improve key habitats for deer and turkey. Manage 9,500 acres intensively for grouse. Endangered, threatened, and species of special concern will receive additional emphasis to protect them and enhance their habitat. Practice intensive wildlife habitat management for non-game species near developed recreation sites. Adoption of a hunting and fishing stamp will not be recommended. A substantial fisheries habitat improvement program will be undertaken on the Allegheny Reservoir. Management of the cold water fishery will be increased moderately. Several small warm water impoundments will be constructed.

Wilderness (Problem 6) - 9,719 acres designated Wilderness and 23,100 acres designated National Recreation Area.

Significant Results of Alternative E[1]

Present Net Value (M$) Over 150 Year Planning Horizon	583221
Returns to Treasury in 1st Decade (M$)	24581
Annual Budget in (M$) 1st Decade	6659
Payment to Counties in First Decade (M$)	13307
Acres by ROS Class (Thousand of Acres)	
Primitive	0
Semi-Primitive Non-Motorized	10
Semi-Primitive Motorized	139
Roaded Natural	353
Rural	1
Use by ROS class in Fifth Decade (thousand RVD's)	
Primitive	0
Semi-Primitive Non-Motorized	239
Semi-Primitive Motorized	4692
Roaded-Natural	16404
Rural	9416
New Campgrounds	7
Expanded Campgrounds	3
Rustic Resorts	1
Miles of New Trail (20 yr)	
Pedestrian	142
Motorized Winter	28
Motorized Summer	364
Boat Launches	4
Information Centers	1
Timber Harvest	
Sawtimber 1st Decade MMBF	311
Total Volume 1st Decade MMBF	890
Long-Term Sustained Yield MMBF/Yr	89
Big-Game Wildlife User Days in 5th Decade M WFUD's	1597
Small-Game Wildlife User Days in 5th Decade M WFUD's	477
Non-Game Wildlife User Days in 5th decade M WFUD's	740
Acres of Non-structural Wildlife Habitat Maintenance and Habitat Improvement Work Done in Decade 1 M Acres	31
Acres of Wilderness M Acres	10
Acres of National Recreation Area M Acres	23

1 In some cases, the results are projected beyond the first decade planning period to show potential benefits if this alternative would remain in effect for that period of time.

ASSIGNMENT OF LAND TO MANAGEMENT AREAS

The land and resource conditions described in Table 2-10 are called management areas. The acres assigned to each management area and the spatial distribution of each management area vary by alternative. The selection of management areas was based on the mix of goods, services, and uses of each alternative. An alternative may create the same vegetative condition at several locations within the Forest, i.e., a management area will usually not be one continuous area. The selection of land to create a desired future condition requires matching its suitability and capability to produce the mix of goods, services, and uses desired. The results of the selection are a set of maps that show the amounts and locations of the management areas.

Management activities used within a management area can also be applied at different levels of intensity by varying the use, timing, and standards and guidelines of the activities. The scheduling of practices for each alternative is displayed in Chapter 4 of this document.

The kind and amount of management areas for each alternative are indicative of the primary purpose of the alternative.

Alternative A - Half of the forest is assigned to Management Area 6.1, 21 percent to Management Area 2, and 14 percent to Management Area 3. This reflects the emphasis of Alternative A on priced, non-market benefits from the Allegheny National Forest.

Alternative B - The Management Area assignments reflect the current Allegheny National Forest management direction and meet the 1980 Resouces Planning Act (RPA) targets. Half of the Forest is assigned to Management Area 3. Areas not needed to sustain the small increase in timber harvest volume are managed to produce dispersed recreation and wildlife; 37 percent of the Forest is Management Area 6.1.

Alternative C - 75 percent of the Forest is assigned to Management Area 3, reflecting the emphasis of Alternative C on producing benefits with established market prices, namely sawtimber volume.

Alternative D - The emphasis of this alternative on increasing both market and non-market benefits with consumptive benefits (outputs without established market values) results in assigning 65 percent of the Forest to Management Area 3 and 20 percent to Management Area 6.1.

Assignment of Land to Management Areas

Alternative E - In this alternative, 35 percent of the Forest is assigned to Management Area 2, 32 percent to Management Area 3, and 21 percent to Management Area 6.1. This reflects the emphasis on increasing production of both the market and non-market benefits, as well as special emphasis on visual quality which causes higher amounts of uneven-aged management.

Table 2-10 ASSIGNMENT OF LAND TO MANAGEMENT AREAS
(Thousands of Acres and Percent of Net National Forest Land)

Mgt. Area	Desired Condition of the Land	Alternative A	B	C	D	(D2)	E
1	Mixed even-aged forest with a large aspen component; wildlife game species emphasis-particularly grouse & deer; roaded recreation environment with roads periodically closed.	11 2%	2 1%	0	7 1%	(7) (1%)	10 2%
2	Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with some roads closed.	105 21%	20 4%	11 2%	6 1%	(6) (1%)	175 35%
3	Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with some roads closed.	70 14%	239 48%	380 75%	327 65%	(327) (65%)	158 32%
4	Even-aged conifer forest with associated wildlife species; roaded recreation environment with some roads closed	5 1%	0	17 3%	0	(0)	6 1%
5	Congressionally designated wilderness	10 2%	10 2%	10 2%	10 2%	(10) (2%)	10 2%
6.1	Forest area managed primarily for semi-primitive, motorized dispersed recreation opportunities and wildlife game species, such as turkey, squirrel, and deer. Most roads closed.	266 52%	190 37%	46 9%	101 20%	(101) (20%)	109 21%

Table 2-10 ASSIGNMENT OF LAND TO MANAGEMENT AREAS (cont'd)
(Thousands of Acres and Percent of Net National Forest Land)

Mgt. Area	Desired Condition of the Land	Alternative A	B	C	D	(D2)	E
6.2	Even-aged hardwood forest - logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation opportunities during 30 year period between "harvesting decades." All roads closed.	1 1%	2 1%	6 1%	20 4%	(20) (4%)	1: 1%:
6.3	Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands; and hardwood stands; emphasize riparian wildlife species, such as waterfowl and warm water fish; roaded recreation environment with most roads closed to public use.	1 1%	1 1%	1 1%	1 1%	(1) (1%)	1: 1%:
6.4	Allegheny National Recreation Area	23 5%	23 5%	23 5%	23 5%	(23) (5%)	23: 5%:
7	Large-scale developed recreation areas or resorts.	1 1%	1 1%	1 1%	1 1%	(1) (1%)	1: 1%:
8	Protection and management of unique ecosystems, research areas, and areas having national significance.	6 1%	6 1%	6 1%	6 1%	(6) (1%)	6: 1%:
9.1	Forests resulting from natural succession; recreation use and wildlife species occur solely as a result of Federal ownership of the land; management emphasis on protecting the environment and forest users.	4 1%	9 2%	2 1%	1 1%	(1) (1%)	3: 1%:

E. COMPARISON OF ALTERNATIVES

This section is a summary of the major outputs of each alternative, including the preferred alternative. The outputs are displayed in a comparative format and provide further definition of the problems and alternative choices for resolving these problems. The following sections are included:

- Comparison of Management Practices and Outputs by Management Problems
- Significant Differences in Economic Values Among Alternatives
- Major Tradeoffs Among Alternatives
- Comparisons to RPA Targets
- Summary of Cummulative Effects

The differences shown in the alternative outputs must be considered judiciously by the reader to draw a conclusion as to which alternative maximizes total net public benefits. It must be kept in mind that all the available information must be used to derive the net public benefit of each alternative, not just items which have a dollar value assigned to them. While some of the more quantifiable information may be considered in an objective manner, the nonquantifiable costs and benefits must be considered subjectively in the trade-off process, which ultimately defines the reader's ranking of alternatives in terms of net public benefit. For this reason, the practices shown in Chapter 4, additional information contained in Appendix B, and the managment area maps may help the reader in reaching a conclusion.

COMPARISON BASED ON THE MANAGEMENT PROBLEMS

Problem 1: Providing Developed Recreation

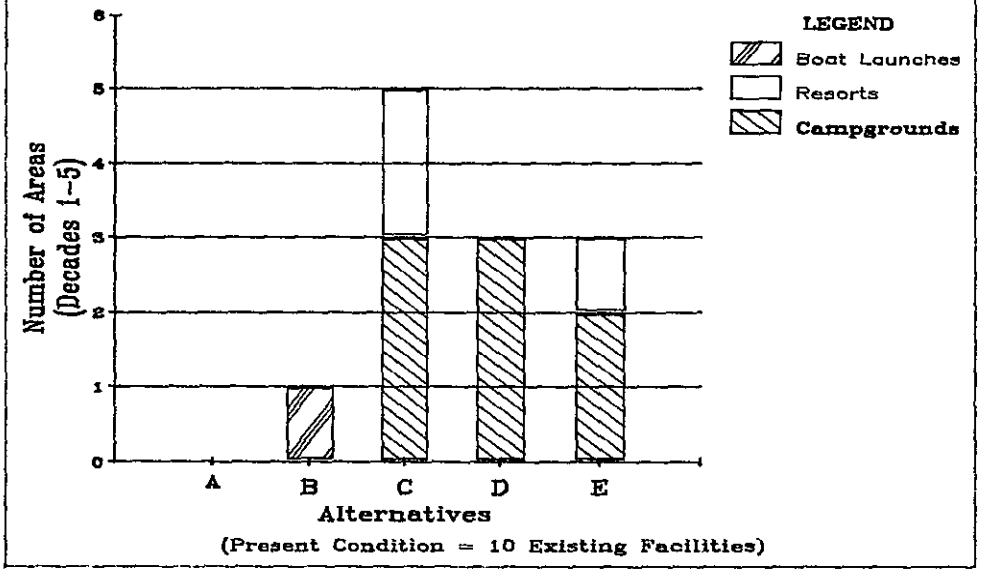
This problem is addressed by the management practice of developed recreation sites (ref. Chapter 4, pages 4-8 to 4-11). This practice involves: (1) the number of new or expanded facilities around the Allegheny Reservoir, (2) the number of new or expanded facilities in other forest areas, and (3) the number of new facilities financed by private capital versus those financed by the USDA-Forest Service.

Occupancy has been high in campgrounds along the major water attractions, particularly the Allegheny Reservoir. The Allegheny National Forest believes that developed recreation demand has been constrained by the lack of additional campground units along the major water attractions - the Allegheny Reservoir, Allegheny and Clarion Rivers, and Tionesta Creek. Nearly all of the proposed campgrounds for each alternative are located along these major water bodies.

Facilities Around the Allegheny Reservoir

Occupancy has been high at developed recreation sites around the Allegheny Reservoir. All alternatives, except Alternative A, propose increasing the number of resorts, new and expanded campgrounds, or boat launches around the Reservoir (Figure 2-2).

FIGURE 2-2
New and Expanded Recreation Facilities
Around the Allegheny Reservoir



The construction of developed sites will increase some types of recreation opportunities and will change the types of recreation. The trade-offs from Alternative A to Alternative C will be a change from a semi-primitive experience around much of the Reservoir to more of a rural experience in Alternative C.

Alternatives C, D, and E have a similar effect on shifting the recreation opportunity on the Reservoir to rural. Alternatives A and B would leave the recreation experience much the same as it exists today. Another trade-off as a result of increased development around the Reservoir is the reduction of the opportunity for people who prefer to fish in solitude.

Comparison by Management Problem

Across the five alternatives, there are three different resorts proposed. The facilities and emphasis for each varies because:

1. The proposed location is near a certain type of recreation opportunity;
2. The access available which may limit the type of recreation user;
3. Topography in the area is more suitable for certain recreation opportunities;
4. It reflects the philosophy of the alternatives.

Following is a narrative describing the type of resort and facilities envisioned at each location. See Chapter 4, Table 4-3 (page 4-9) for resort development by alternative.

Kiasutha Resort would include operating the existing Kiasutha Campground with 91 campsites, swim area, picnic area, and two boat launch lanes on the Kinzua arm of the Reservoir. It has the highest occupancy of all the campgrounds on the ANF, because of the full spectrum of activities available. Across the road from Kiasutha is Camp Cornplanter, a CCC era summer camp. Here the proposed resort might develop year-round rental cabins, a restaurant and lodge, indoor pool, riding stables, grocery store, small marina, and/or gas station.

Sugar Bay Resort would be developed in a large bay located on the east side of the Allegheny Reservoir. This area currently contains a partially constructed boat launch facility and the shoreline is dominated by gentle slopes. The proposed resort would support reservoir based recreation activities and provide rental equipment such as boats, fishing gear, skis, ice fishing shelters and tackle, snowmobiles, horses, and ATV's to the general public. Day use facilities would include a beach, picnic area, marina, boat ramp, restaurant, cafeteria, and gas station. Overnight support facilities may include 100 motel units, lounge, and 200 RV campsites with hookups. The lease would provide an affordable vacation for the average family, enabling them to camp overnight and enjoy a variety of recreation pursuits through rentals.

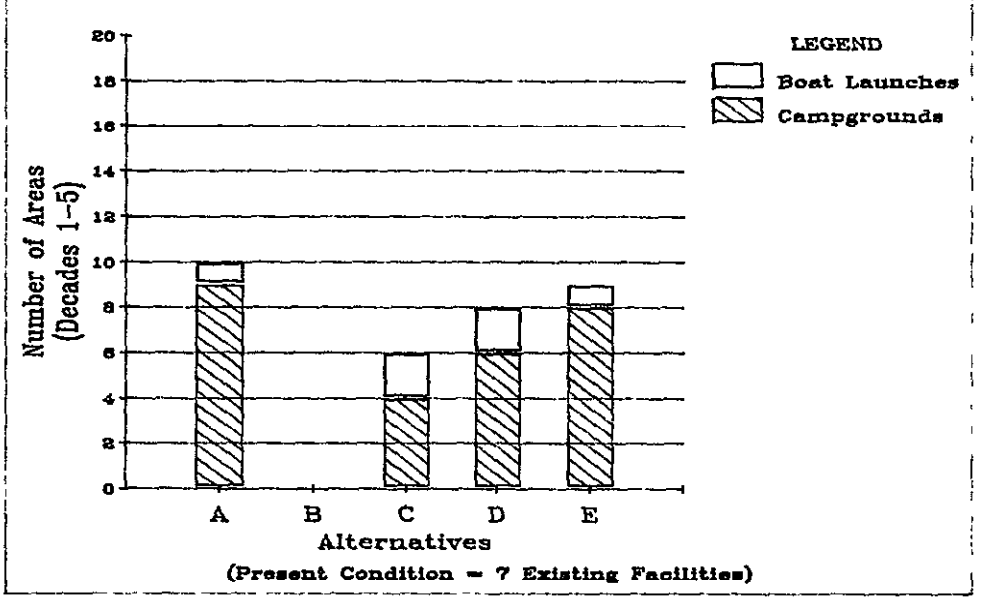
Hodge Run Resort would be developed in a small bay on the west side of the Reservoir. The resort envisioned for this area was a vacation/conference complex located on the steep slopes above the bay. The construction would be very rustic and unobtrusive and might consist of year-round rental cabins, a motel/restaurant/clubhouse/meeting room complex,

small marina riding stables, and small ski lift and slopes. This resort would be extremely unique with spectular views of the hills and reservoir. The bay entrance is very narrow, however, so boaters on the reservoir would not view the resort unless right in front of the bay.

Facilities Outside the Allegheny Reservoir Area

Figure 2-3 identifies campground and boat launch construction that will take place outside the Allegheny Reservoir area. No resorts will be constructed. Alternative A will provide the most new campgrounds and the largest increase in total facility development outside the Allegheny Reservoir area.

FIGURE 2-3
New and Expanded Recreation Facilities
Outside Allegheny Reservoir Area

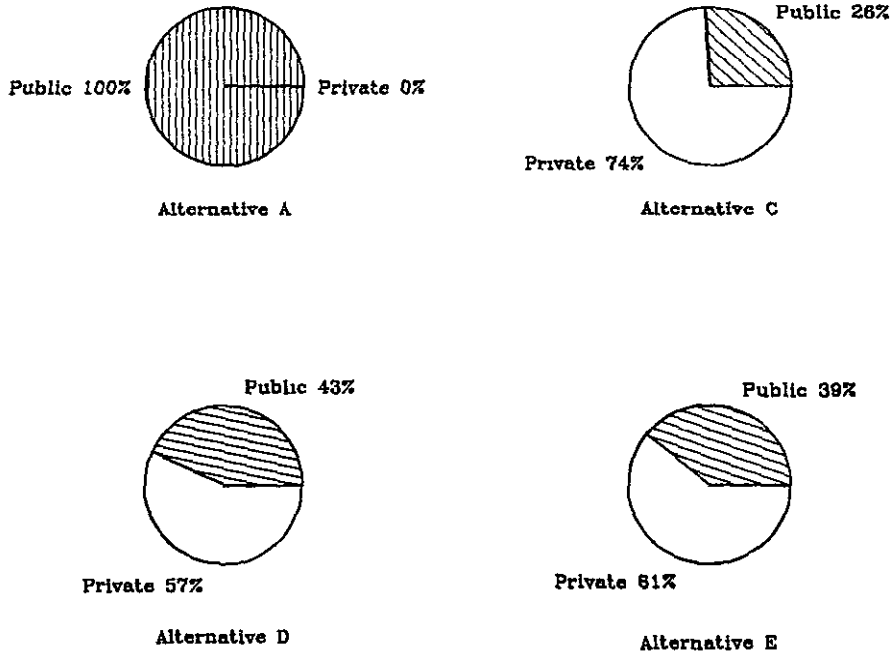


The areas constructed outside the Allegheny Reservoir zone are large in number but are generally small in scale and widely dispersed. These facilities enhance the enjoyment of forest users seeking a semi-primitive or roaded natural experience.

Public or Private Financing for New Recreation Facilities

Figure 2-4 shows the number of sites in new and expanded campgrounds and their proposed financing. Campgrounds proposed for construction with public funds are generally smaller and are not expected to yield profits large enough to attract private corporate financing and management. Campgrounds proposed for private corporate financing are planned at a scale which offers attractive profits to private investors.

FIGURE 2-4
Percentage of Campsites by Type of Financing
(Total Decades 1-5)



Note Alt B is missing because no new campsites are proposed.

Problem 2: Providing Dispersed Recreation

This management problem is addressed through the management practice of dispersed recreation management (ref. Chapter 4, pages 4-11 to 4-15). Dispersed recreation is managed by the number of acres assigned to each Recreation Opportunity Spectrum (ROS) class, the output of dispersed recreation use, and the number of miles of new trail construction.

Acres by ROS Class

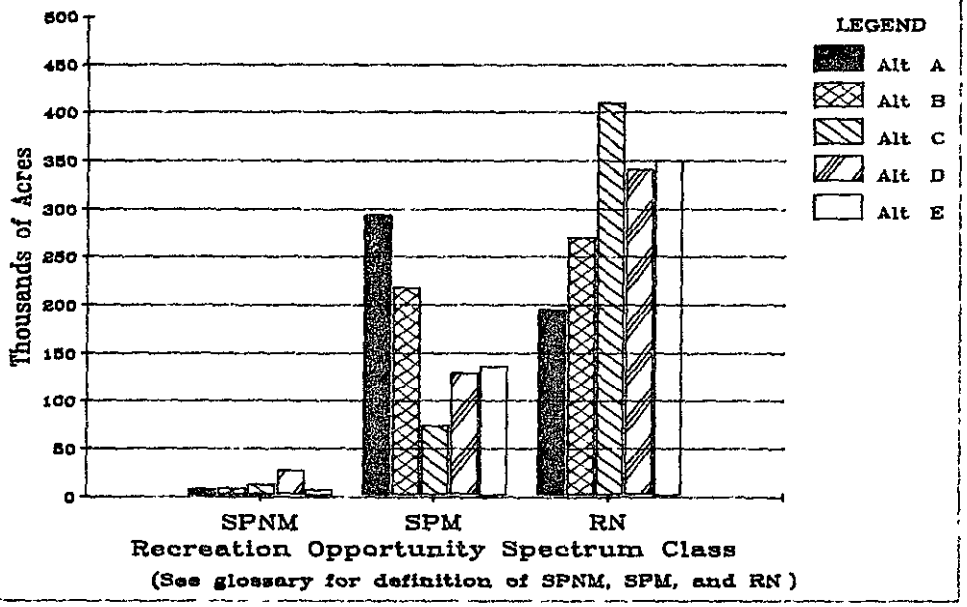
The number of acres by ROS class indicates what proportion of the forest will be available for various types of recreational opportunities and experiences (see Figure 2-5). Several trade-offs can be derived by looking at the acres by ROS class. The first is that as one ROS class increases, it must be offset by a decrease in at least one of the other ROS classes since the land base remains constant. The second trade-off is that as the acres of roaded natural ROS class change, so do the number of acres receiving a timber harvesting prescription. When an acre receives a timber harvesting prescription, it is put into roaded natural ROS class. Therefore, the number of acres of timber harvesting will increase as the number of acres in the roaded natural ROS class goes up.

As mentioned previously, except for Management Area 6.2, semi-primitive recreation and timber harvesting are mutually exclusive. So the most significant trade-off in assessing the acres allocated by ROS class is that the more acres there are in semi-primitive ROS classes, the fewer acres receive timber harvesting prescriptions.

The purpose of Alternative A is to increase semi-primitive recreation and allow a slight decrease in timber harvest. Therefore, it is not surprising that it ranks highest in the number of acres assigned to semi-primitive recreation and lowest in acres assigned to roaded natural recreation opportunities.

Alternative B provides half of the Forest acres in a roaded natural ROS class and a slight increase in timber harvest.

FIGURE 2-5
Acres by Recreation Opportunity Spectrum Class



Alternative C emphasizes priced market benefits and a high level of income to the U.S. Treasury. These objectives provide for large increases in the timber harvest level and the lowest emphasis on semi-primitive recreation of all the alternatives. It is not surprising that this alternative has the highest number of acres in the roaded natural ROS class of all the alternatives and the fewest acres in the semi-primitive ROS class.

Alternative D's objectives are to increase both market and non-market goods over current levels. This alternative ranks first in the acreage assigned to a semi-primitive nonmotorized ROS class and third in the total number of acres assigned to the semi-primitive ROS classes.

Alternative E has much the same objectives as Alternative D for providing both market and non-market goods, but attempts to provide a high-quality roaded natural experience by increasing the age at which trees can be harvested. The results are a few more acres in the roaded natural ROS class to maintain volume objectives, but, in general, acres by ROS class do not significantly differ from those in Alternative D.

Dispersed Recreation Use

The RVD's by ROS class (Table 2-11) give an indication of not only the amount of the Forest in each class (Figure 2-5) but also the intensity of management for dispersed recreation. Alternative C provides for much roaded natural opportunity, but little will be done in terms of the intensity of recreation management. As a result, less RVD's per acre are expected in Alternative C than in Alternative A where recreation management is intense, and more RVD's per acre are produced.

In reviewing Table 2-11, the intensity of recreation management is shown by the rate of increase in RVD's from decade 1 to 5. Alternative A shows large increases in RVD's produced in all ROS classes. Alternative B shows small increases, and, in fact, a decrease in the roaded natural category indicating a low level of recreation management. Alternative C demonstrates much the same pattern as Alternative B. Alternative D shows moderate increases. Alternative E shows large increases.

Table 2-11 Dispersed Recreation Visitor Use by Recreation Class (Thousands of RVD's)

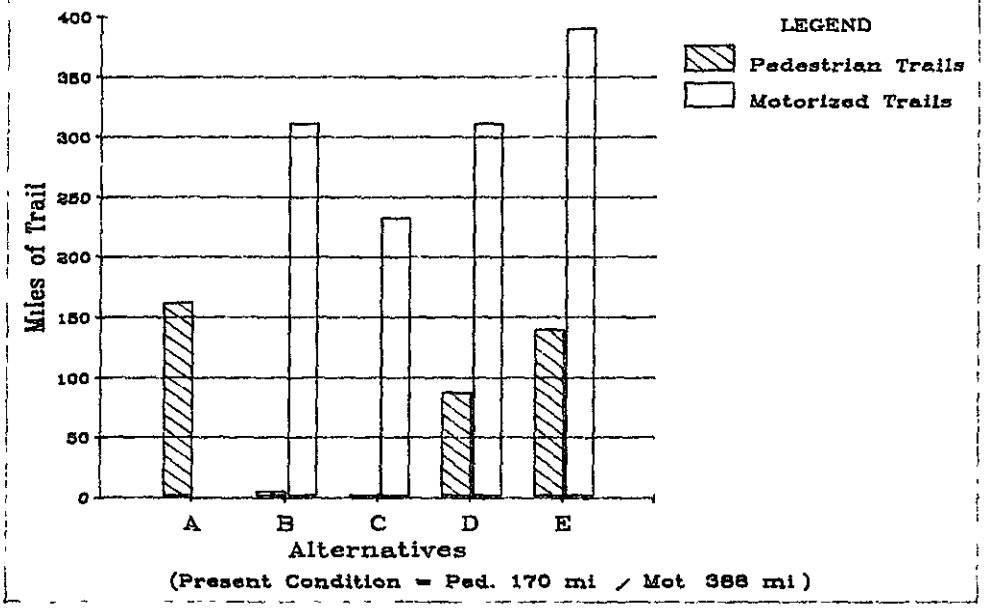
Recreation Class		Alternative				
		A	B	C	D	E
SPNM						
Planned	**Decade 1**	**112**	**121**	**143**	**296**	**122**
Projected	Decade 2	169	183	198	417	184
Projected	Decade 3	198	225	259	658	220
Projected	Decade 4	215	251	277	732	243
Projected	Decade 5	216	248	245	605	239
SPM						
Planned	**Decade 1**	**8,627**	**4,734**	**1,519**	**3,678**	**3,977**
Projected	Decade 2	8,846	4,734	1,519	3,723	4,070
Projected	Decade 3	9,065	4,734	1,519	3,768	4,168
Projected	Decade 4	9,293	4,749	1,526	3,820	4,273
Projected	Decade 5	9,400	4,749	1,526	3,842	4,322
RN						
Planned	**Decade 1**	**3,881**	**3,200**	**5,015**	**4,994**	**7,187**
Projected	Decade 2	4,319	3,134	4,950	5,246	8,091
Projected	Decade 3	4,758	3,068	4,884	5,499	8,994
Projected	Decade 4	5,262	3,068	4,884	5,817	9,963
Projected	Decade 5	5,514	3,068	4,884	5,975	10,447

Comparison by Management Problem

For several reasons, RVD increases occur over several decades when recreation management is intensified. First, it takes time to realize gains from a recreation investment. For example, when a new trail is built, the use is not immediate but increases over time. Secondly, new facilities are developed over time.

The trade-offs from an intense versus a low level of recreation management are in terms of costs. An intensive program is obviously more costly. However, the same number of RVD's can be produced on a somewhat smaller land base.

FIGURE 2-6
New Trails in Decades 1 and 2



(Present Condition = Ped. 170 mi / Mot 388 mi)

Trail Construction

Another indication of the intensity of recreation management is the miles of new trails constructed by alternative. Alternative E will have the most intensive trail building program, followed by Alternative D. The remaining alternatives propose less trail construction because they are either emphasizing predestrian trails with no off-road vehicle trails (Alternative A) or emphasizing off-road vehicle trails with few pedestrian trails (Alternative B and C).

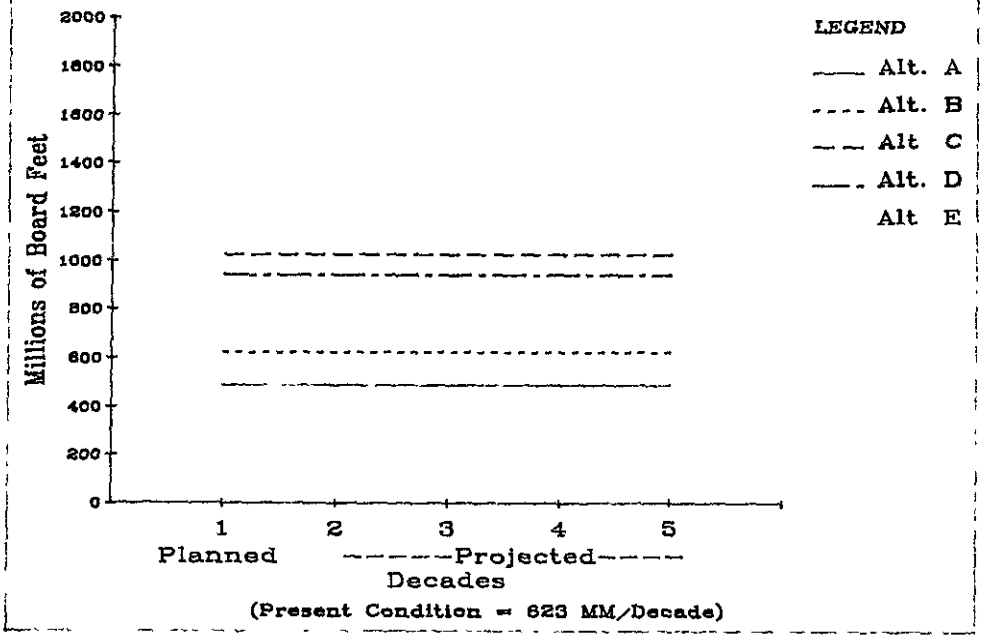
Problem 3: Timber Management

This management problem is addressed by the management practices of : (1) even-aged silviculture, (2) uneven-aged silviculture, and (3) herbicide treatment. The output of total timber and sawtimber volumes address the general management problems. Even-aged silviculture is addressed by acres of final harvest and thinnings. Uneven-aged silviculture is addressed by acres of selection harvest, and herbicide treatment is addressed by the number of acres receiving treatment.

Total Timber Volume Production

All of the alternatives, except Alternative A, increase the total timber volume production over current levels (Figure 2-7). In all alternatives, the long-term sustained yield of timber volume is met in the first period. Therefore, the total volume reaches its upper limit in period one and remains constant in each alternative.

FIGURE 2-7
Total Timber Volume Production



As indicated in the dispersed recreation discussion, the amount of harvest affects the distribution of acres by ROS class. As timber volume increases, the number of acres in the semi-primitive ROS classes decrease. Alternative A harvests the lowest volume at 489 MMBF per decade with Alternatve C harvesting the most at 1026 MMBF per decade.

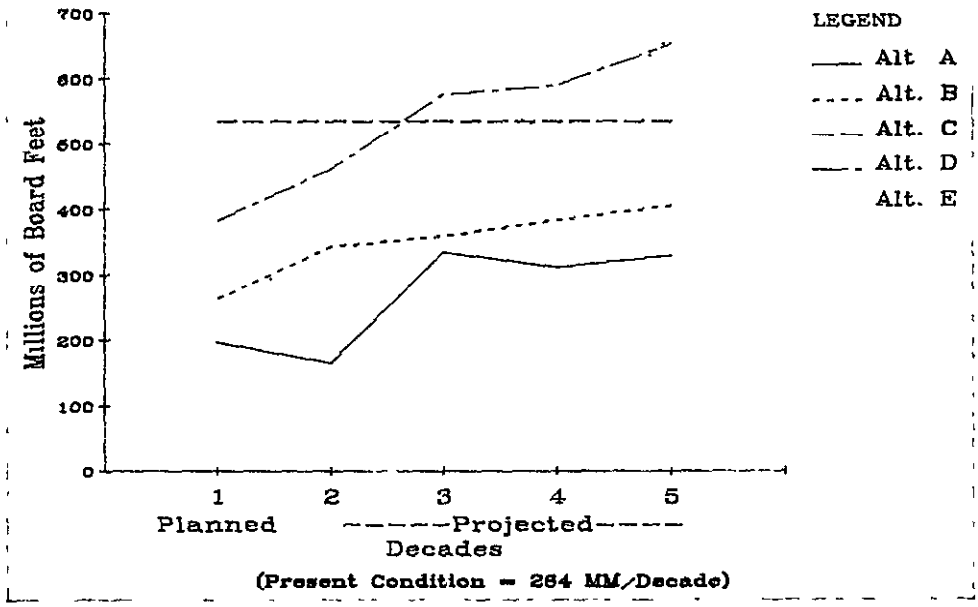
Sawtimber Volume Production

Pulpwood has little market value on the Allegheny National Forest. Therefore, in examining the effects of each alternative, sawtimber production is the important indicator (Figure 2-8).

Alterative C harvests the greatest amount of sawtimber in decade 1 and maintains a constant level of production through decade 5. Alternative D begins at a level slightly lower than Alternative C and slowly increases to about the same level by decade 3. Alternative B represents current level production and increases slowly through decade 5.

Alternative E starts at a level similar to current and increases rapidly in decades 2 and 4. It offers the highest level of sawtimber production of all alternatives by decade 5. Alternative A remains below current sawtimber volume in decades 1 through 5.

FIGURE 2-8
Sawtimber Volume Production



Because of its high price, sawtimber volume has a significant effect on returns to the treasury (page B-245) and payments to counties (page 4-120). Alternative B represents current management if continued into the future. Alternative A would cause a reduction from current returns to the treasury and payments to the counties.

Alternatives C and D would provide higher than current returns to the Treasury and payments to counties. Although Alternative E payments and returns total to a higher value than Alternative B for the first five decades, they are actually below alternative B for Decades 2 and 4.

Vegetation Treatments

Table 2-12 addresses the vegetation management portion of the timber management problem statement. This table provides data on the harvesting systems to be used over the first 5 periods on areas under timber management. Chapter 4 gives a detailed discussion on environmental effects and cumulative effects of harvesting systems.

Table 2-12 Acres of Vegetation Treatment
(Thousands of Acres)

Treatment		Alternative A	B	C	D	E
Final Harvest[1]						
Planned	**Decade 1**	**3**	**31**	**67**	**33**	**7**
Projected	Decade 2	3	29	54	34	4
Projected	Decade 3	2	23	41	47	8
Projected	Decade 4	5	25	43	31	12
Projected	Decade 5	5	24	36	40	14
Selection Harvest						
Planned	**Decade 1**	**67**	**18**	**2**	**7**	**107**
Projected	Decade 2	64	0	0	0	67
Projected	Decade 3	67	18	6	7	108
Projected	Decade 4	64	0	5	0	67
Projected	Decade 5	67	18	6	7	108
Herbicide						
Planned	**Decade 1**	**31**	**0**	**28**	**20**	**48**
Projected	Decade 2	29	0	28	18	31
Projected	Decade 3	13	0	23	28	13
Projected	Decade 4	13	0	24	16	12
Projected	Decade 5	14	0	19	22	17
Thinning						
Planned	**Decade 1**	**11**	**11**	**6**	**94**	**43**
Projected	Decade 2	20	19	3	78	100
Projected	Decade 3	8	16	40	25	41
Projected	Decade 4	20	21	7	77	87
Projected	Decade 5	1	18	39	26	14

1 10 percent of this acreage receives a clearcut and 90 percent receives shelterwood seed and removal cuts.

Even-aged management is more frequently used in Alternative C, with 67,000 acres clearcut in decade 1. Alternatives B and D clearcut 31,000 acres and 33,000 acres, respectively, in decade 1. There is little use of even-aged management in Alternatives E and A.

The amount of even-aged management affects both horizontal diversity and species composition. Horizontal diversity is increased in the long run with increases in even-aged management. Therefore, by the end of decade 5, Alternative C would have the largest amount of horizontal diversity and Alternative A would have the lowest amount. Tree species which are shade intolerant are more likely to dominate a timber stand managed under even-aged management on the Allegheny National Forest. This means under Alternative C, intolerants, such as black cherry, white ash, and yellow poplar, would be more prevelant than in the alternatives with less even-aged management.

Uneven-aged management increases the amount of vertical diversity and changes the species composition. Alternative E provides significantly more selection harvest in Period 1 than any other alternative (107,000 acres) followed by Alternative A (67,000 acres), Alternative B (18,000 acres), and Alternatives C and D which have small amounts. Tree species which are shade tolerant, such as beech, hemlock, and sugar maple, will be more common in a stand managed under uneven-aged management.

There are several trade-offs between clearcutting and selection cutting. First, the value of intolerant species has been greater than tolerant species on the Allegheny National Forest. Second, the visual resource would also show some trade-offs based on the harvesting method used. Under selection harvests the forest would appear as a continuous canopy with only occasional openings. Clearcutting would cause a forest with a broken forest canopy and frequent openings.

Alternatives A and E, which predominantly use selection harvest methods, would provide a forest condition similar to that existing today in terms of the visual resource. Alternative B would result in a moderate change from existing condition. Alternative D ranks between Alternatives B and C in terms of the impact on visual quality. Alternative C has the greatest change from the present condition of the visual resources.

Each alternative maintains minimum viable populations of all of the native wildlife species. There are several trade-offs, however, which relate to timber vegetation management and wildlife diversity. First, those alternatives with more even-aged management favor those

species which require early successional stages. Uneven-aged management and thinning, on the other hand, favor a different mix of species, those which require high vertical diversity on a given tract of land. For the second trade-off, those alternatives with a more even mix of clearcutting versus selection cutting/thinning will have higher populations of more kinds of species than those alternatives which contain primarily one type of cutting. Therefore, Alternatives C, A, and E will have fewer species with high populations. Alternatives B and D, on the other hand, will have a greater variety of species with high populations, and, therefore, greater wildlife diversity. Keep in mind these are only the effects of timber harvesting. Non-structural habitat improvement practices in some alternatives will serve to increase diversity (see the next section).

Problem 4: Wildlife Habitat

This management problem is addressed by the management practices of acres of wildlife habitat improvement and maintenance and the output of expected number of big, small, and non-game wildlife user days. A discussion of general population trends of management indicator species can be found in Chapter 4, Cumulative Effects of Alternatives (page 4-98).

Non-Structural Habitat Improvement and Maintenance

The amount of Non-Structural wildlife habitat maintenance and improvement work (in addition to the acreage of habitat modified through timber sales) varies from 17 thousand to 35 thousand acres in decade 1 (see Table 2-13). Habitat maintenance and improvement projects are designed to increase populations of selected wildlife species. These treatments provide habitat components that are missing, or else they increase the carrying capacity of the existing habitat by supplementing the habitat which results from timber harvesting treatments (see Table 2-12). Though Alternatives C, A, and E still provide the lowest habitat diversity and Alternatives B and D the highest, habitat improvement in Alternatives A and E serves to decrease the wide variation between Alternatives A, E, B, and D.

There is also a cost trade-off. Habitat improvement for some species results from timber harvesting. This improvement is a side benefit (at no cost) from harvesting.

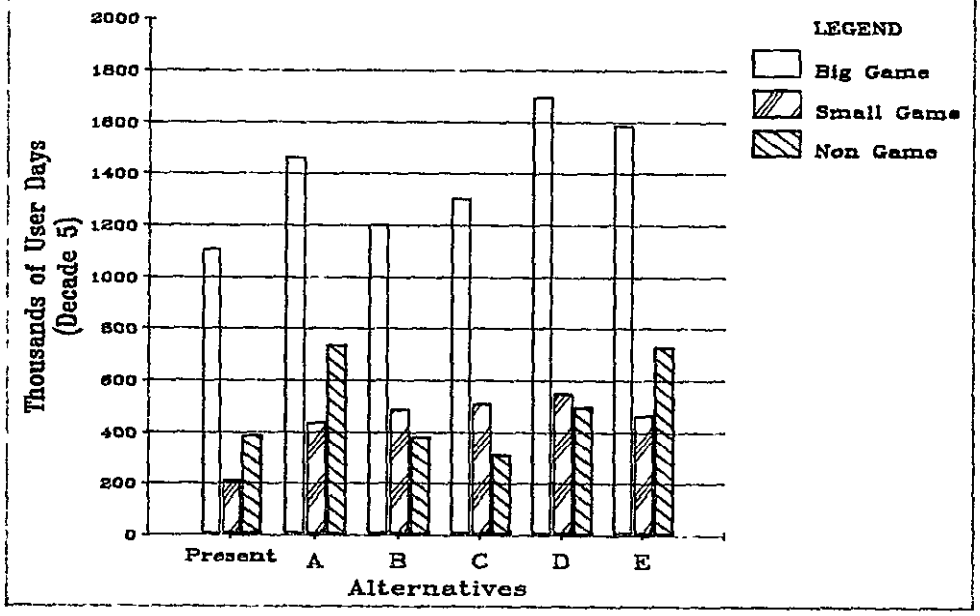
Table 2-13 Acres of Non-Structural Wildlife Habitat Maintenance and Improvement
(Thousands of Acres)

		Alternative				
M Acres of Improvement		A	B	C	D	E
Planned	**Decade 1**	**35**	**20**	**17**	**24**	**31**
Projected	Decade 2	40	19	17	28	41
Projected	Decade 3	49	20	17	35	44
Projected	Decade 4	49	20	17	36	44
Projected	Decade 5	52	20	17	37	44

Wildlife User Days

Figure 2-9 displays wildlife user days in the fifth decade in three categories: 1) big-game, 2) small-game, and 3) non-game. Alternative D ranks highest in the number of both big-game and small-game user days produced. Alternative B is the lowest producer of big-game user days, and Alternative E ranks lowest in production of small-game. Both Alternatives A and E rank high in production of non-game user days, with Alternative C ranking lowest.

FIGURE 2-9
Wildlife User Days



Comparison by Management Problem

Increased horizontal diversity tends to increase the population of certain species but decreases others. Deer populations are very responsive to increases in horizontal diversity. It is also possible to provide the habitat requirements for the wild turkey and black bear with moderate wildlife investments when even-aged management is used to increase horizontal diversity through proper timber sale layout and road and trail management. A management program that provides the habitat requirements best for the white-tailed deer, wild turkey, and black bear will also provide the highest levels of big game Wildlife User Days. One trade-off of providing high levels of big game Wildlife User Days through increasing horizontal diversity is that even-aged management increases. Therefore, populations of species that require early successional vegetation will also increase. Those species that require old growth habitat or vertical diversity will show reduced populations.

The impacts of horizontal and vertical diversity can be enhanced or offset by the amount and kind of habitat maintenance and improvement done. The habitat work done on the Allegheny National Forest is generally directed toward big-game species. Therefore, even in Alternatives A and E, where horizontal diversity is low, big-game use is maintained at higher levels through accomplishing a large amount of habitat improvement. The most significant trade-off of habitat work is that it removes land from timber production. The alternatives with more acres of habitat maintenance and improvement will result in more acres being taken out of timber production.

Problem 5: Private Oil and Gas Development

This management problem is treated the same in all alternatives, thus, no comparison of alternatives can be made.

Problem 6: Wilderness

This management problem is treated the same in all alternatives, thus, no comparison of alternatives is necessary.

SIGNIFICANT DIFFERENCES IN ECONOMIC VALUES AMONG ALTERNATIVES

Present net value (PNV) estimates the potential economic effectiveness of management of the land and water resources of the forest for each alternative. It is an extremely important measure of the economic value of the forest. It is one component or partial measure of net public benefits. It is calculated by subtracting budget costs from the economic or priced benefits that would be produced under a planning alternative, after both costs and benefits are appropriately discounted to the present (see Appendix B, page 76). PNV measures the net economic value of outputs for which dollar values are calculated. Economic costs and benefits and net economic and cash values are important components of net public benefits, the criterion used to evaluate each of the alternatives, as explained on pages 4 to 6 of this chapter.

a. Differences in Present Net Values

The alternatives are ranked by decreasing PNV in Table 2-14. The max PNV benchmark is provided as a reference point; it is not designed to respond to public issues.

Table 2-14 Present Net Value and Discounted Costs and Benefits by Alternative (Million Dollars)

Alternative/Benchmark	PNV	Change	Discounted Costs	Change	Discounted Benefits	Change
Max PNV (benchmark)	619		192		811	
		-26		-17		-53
Alt. E (RPA)	583		175		758	
		-42		-12		-54
Alt. D (Preferred)	541		163		704	
		-20		-11		-32
Alt. C	521		152		672	
		-15		-13		-26
Alt. A	506		139		646	
		-66		-25		-93
Alt. B (Current)	440		114		553	

Differnces in PNV for each alternative occur for the following reasons:

- o alternatives have different sets of goals and objectives
- o alternatives respond differently to the management problems
- o alternatives achieve different levels of non-prices outputs.

As PNV decreases across alternatives so do discounted costs and benefits. In all alternatives, the discounted benefits are between four and five times greater than discounted costs.

Table 2-15 shows the economic benefits and costs that are associated with each resource element. Following are the reasons which account for differences in present net value relative to the maximum present net value benchmark. An exhaustive discussion of the reasons and further breakdowns of amounts of opportunity costs is provided in the FEIS, Appendix B, Chapter VIII, Section D.

Table 2-15 Present Net Value and Discounted Benefits and Costs by Element[1]
(Million Dollars)

	Discounted Benefits by Element							
Alt.	PNV	Rec	Wild	Wildlf	Tbr	OGM	Support	Total
E (RPA)	583	347	4	172	234	1	0	758
D (Preferred)	541	271	4	139	290	1	0	704
C	521	238	4	117	313	1	0	673
A	506	299	4	213	129	1	0	646
B (Current)	440	236	4	132	181	1	0	553

	Discounted Costs by Element[2]						
Alt.	Rec	Wild	Wildlf	Tbr	OGM	Support	Total
E (RPA)	36	1	19	73	2	44	175
D (Preferred)	37	1	16	67	2	39	163
C	32	1	4	72	2	40	152
A	34	1	26	39	2	36	139
B (Current)	28	1	5	42	2	36	114

1 Direct comparisons of benefits and costs by individual resources provide broad indications of specific relationships, but may be misleading because many costs cannot be separated under multiple use management.

2 Costs include only those incurred by the Forest Service.

In Table 2-15 the discounted benefits and costs for Wilderness and OGM elements do not change among alternatives. The reason is that Wilderness reflects the Pennsylvania Wilderness Act in all alternatives. OGM does not change by alternative because the private sector owns 94 percent of the oil and gas rights in the Forest. The Forest

Service is legally obliged to allow development. Therefore, the effect of oil and gas development is the same regardless of the alternative. Support costs vary slightly between alternatives. The change occurs at a slower rate than in resource elements since a significant portion of these are fixed overhead costs.

Alternative E ranks first among all alternatives in PNV, discounted benefits, and discounted costs. Alternative E emphasizes increases in the production of both market and non-market goods and services. The discounted benefits are higher in Alternative E than any other alternative due to emphaisis in both developed and dispersed recreation. Alternative E has the highest discounted cost for the timber element, but benefits for this element rank third among alternatives. This is a result of the long rotations and selection harvesting in this alternative.

As in Alternative E, Alternative D emphasizes both market and non-market goods and services. In Alternative D the increases are not as great as in Alternative E. The reason timber benefits are greater in Alternative D is because the predominate silvicultural system is even-aged management.

In Alternative C the emphasis is on market outputs. The result is that this alternative ranks first in discounted benefits in the timber element. In recreation the emphasis is on developed recreation only. The benefits in this element come from developed recreation and induced dispersed recreation. The benefits and costs of the wildlife element are lower than any other alternative with the majority of benefits being induced.

Alternative A emphasizes non-market outputs. Therefore, this alternative displays high discounted benefits and costs in the wildlife element. It is second only to Alternative E in discounted benefits in the recreation element. Alternative E is higher because of its emphasis on developed recreation which are not included in Alternative A. Discounted benefits and costs in timber element rank last among all alternatives.

The current situation is represented by Alternative B. Alternative B ranks last in PNV, discounted benefits, and discounted costs. There is no increased emphasis planned in any element. As a result, it ranks near the bottom in discounted benefits and costs for all elements.

For more discussion on comparisons among alternatives, see Appendix B, pages B-274 to B-280.

In the following section, individual resource reductions in present net value do not total to the reductions shown in Table 2-14 and 2-15 for the following reasons: 1) total PNV in the tables includes both FORPLAN and Non-FORPLAN costs and outputs, 2) individual resource PNV changes in the narrative includes only FORPLAN costs and outputs, and 3) some objectives or emphases cause relatively small PNV changes individually.

b. Differences in Costs

Discounted costs for the oil, gas and minerals (OGM) element does not change among alternatives. The reason is that projected OGM development on the Forest was held constant across all alternatives. Support costs and general administration (GA) costs vary slightly between alternatives. The change in discounted costs occurs at a slower rate than in resource elements since a significant portion of these costs are fixed overhead costs.

c. Differences in Economic Benefits and Cash Flows

Benefits considered in the analysis can be separated into two categories: 1) priced outputs and, 2) non-priced outputs. Priced outputs can be subdivided into two areas: those outputs with values assigned in the market place or market outputs; and those outputs with values based on the consumers willingness to pay or non-market outputs. Non-priced benefits do not have available market transaction evidence. There is no reasonable basis for making market value estimates which are comparable to priced output values. This discussion focuses on the economic benefits associated with market and non-market priced outputs.

Market outputs are outputs which are routinely traded in an established market and return dollars to the U.S. Treasury. These outputs are timber, camping at developed campgrounds, and U.S.-owned minerals. Nonmarket outputs are outputs which are not customarily sold in an established local market and, therefore, do not return dollars to the U.S. Treasury, but to which a dollar value can be assigned. This value represents what a user would be willing to pay. Examples include hunting, fishing, dispersed recreation, and wilderness use.

Comparisons of economic benefits to budget costs measure the overall efficiency of alternatives. Cash receipts and costs measure actual flows to and from the U.S. Treasury and the taxpayers. On this forest, the major differences among cash receipts are due to quantity and quality of hardwood sawtimber produced. However, when total economic benefits (receipts and noncash benefits) are considered, differences among alternatives are a function of recreation, wildlife, and timber production. Average annual cash flows and noncash benefits in the first and fifth decades are displayed in table 2-16, by alternative.

Table 2-16 Average Annual Cash Flows and Noncash Benefits in the First and Fifth Decades by Alternative
(Million Dollars)

Decade 1

Alternative/ Benchmark	Net Receipts[1]	Total Costs[2]	Total Receipts[3]	Noncash Benefits
Alternative C	0.4	6.6	7.0	15.2
Alternative B	-0.9	5.0	4.1	16.1
Max PNV Benchmark	-1.2	7.7	6.5	17.3
Alternative D	-1.3	7.0	5.7	17.4
Alternative E	-1.5	6.6	5.1	18.8
Alternative A	-1.8	5.8	4.0	17.6

Decade 5

Alternative/ Benchmark	Net Receipts	Total Costs	Total Receipts	Noncash Benefits
Alternative C	5.5	5.5	11.0	19.7
Alternative B	4.4	4.3	8.7	17.0
Max PNV Benchmark	14.4	7.2	21.6	24.6
Alternative D	7.4	6.1	13.5	20.7
Alternative E	5.3	6.7	12.0	27.9
Alternative A	1.7	5.6	7.3	24.2

1 Net receipts are the difference between total costs and total receipts.
2 Total costs include all the Forest Service costs expected to be incurred in order to implement each alternative.
3 Total receipts include the actual dollar receipts received by the Forest Service from timber sales, developed recreation, special uses, and U.S. owned minerals.

Receipts other than those from the sale of timber are relatively minor, averaging less than two percent of total receipts in all alternatives. Gross receipts for all alternatives are higher than the 1980-1982 average of $3.4 million. They are projected to increase over current receipts primarily because of an increase in quality and/or quantity of timber produced.

Cash receipts are greater than expenditures for Alternative C in all decades, for Alternative B and D in decades 2 to 15, for Alternative A in decades 3 to 8, and for Alternative E in decades 3 to 10. In the first decade, net receipts are negative or low because of the age structure of timber on the Allegheny NF and the amount of investment in other resources. A significant portion of the Forest is in the 60 to 80 year age class in decade 1. Culmination of mean annual increment of dollars does not occur in these stands until the approximate age of 120 years. The result is that in decade 1 the undiscounted unit value are lower on average than if stands were harvested at a later age. In addition, capital investments in other resources, which add to total costs are highest in the early decades for all alternatives. The lower unit value and higher costs result in net receipts being low or negative in decade 1. Net receipts for Alternative A and E are negative in decades 10 to 15 because of the amount of uneven-aged management in those alternatives. By decade 10 the composition of the stands is converted to tolerant species having a low unit value. Higher unit costs for timber sales under uneven-aged maangaement also contributes to a reduction in net receipts.

The portion of economic benefits that would not be collected as cash receipts is a function of the intensity of rcreation and wildlife outputs produced. In decade 1 noncash benefits are essentially constant across alternatives. By decade 5 the effects of the early investments in recreation and wildlife is reflected in noncash benefits. In decade 5 Alternative E has the highest noncash benefits. This alternative emphasizes a high intensity of management in dispersed and developed recreation and wildlife. Alternative A ranks second in noncash benefits with a high intensity of management in dispersed recreation and wildlife and less emphasis than Alternative E on large developed recreation and resorts. Alternative D provides a moderate amount of recreation and wildlife intensity and ranks third in noncash benefits in decade 5. Alternative C provides a high level of developed recreation and a low intensity of

dispersed recreation and wildlife. Alternative B ranks last in noncash benefits in decade 5 and has a low intensity of all recreation and wildlife.

Comparisons of economic benefits to budget costs measure the overall economic efficiency of alternatives. Cash receipts and costs measure actual flows to and from the U.S. Treasury and the taxpayers. On this forest, the major differences among cash receipts are due to quantity and quality of hardwood sawtimber produced. However, when total economic benefits (receipts and noncash benefits) are considered, differences among alternatives are a function of recreation, wildlife, and timber production. Average annual cash flows and noncash benefits in the first and fifth decades are displayed in table 2-16, by alternative.

There has been some effort to reduce the overall costs of each alternative by implementing lower cost options. Implementing the traffice service level concept and the use of herbicides are two examples which have been incorporated into the plan. As the Forest Plan is implemented, other options will be reviewed and implemented as the need develops. An option currently being examined is the use of portable data recorders in timber cruising. The opportunity also exists to streamline the environmental assessment process through tiering to the Forest Plan.

Estimated demand for recreation and wildlife were not met. Certain types of recreation opportunities are met through methods other than timber sales. These methods are viable but most do not generate revenues, and, therefore, result in negative cash flow. Alternative C provides low intensity recreation and wildlife while emphasizing a high non-declining level of hardwood sawtimber production. As a result, this alternative shows positive net receipts in Decade 1. In order to provide a greater variety and a larger absolute amount of recreation and wildlife opportunities, the Allegheny National Forest has proposed a mix of management prescriptions and higher intensity of recreation and wildlife management in all alternatives but Alternative C. For these reasons, the cash flows are negative in Decade 1 for all alternatives except for Alternative C.

MAJOR TRADEOFFS AMONG ALTERNATIVES

This section summarizes the relationships among economic values discussed on pages 2-66 to 2-72 of this chapter, the social effects discussed in Chapter 4 and Appendix B, and differing responses among alternatives to the six management problems discussed in Chapter 1 and Appendices A and B. The purpose is to highlight major economic and noneconomic tradeoffs and differences that indicate how alternatives respond to issues, concerns, and opportunities. A complete understanding of differences among alternatives requires reading all of this Chapter, Chapter 4, and Appendix B.

National, Regional, and Local Overview

Future demands for products and uses from the National Forests were projected as part of the Resource Planning Act Assessment (RPA). This study shows that the Nation's demands for outdoor recreation, wildlife and fish, grazing, timber, and water have been growing rapidly and will continue to increase in the decades ahead. At the same time there is concern that the quality of the environment be protected and enhanced.

Recreation, timber, and mineral resources are the forest outputs most used by national and regional people. The demand for timber species sold on the Allegheny National Forest are set in national and international markets. Markets primarily from Cleveland-Youngstown-Warren, Ohio, and Pittsburgh and Erie, Pennsylvania, tend to be the heaviest regional recreation users (see Appendix B, pages B-78 to B-83 for details on demand).

According to a study by Bowersox and Strauss (1980) demand for grazing on the Allegheny National Forest is near nonexistent.

The primary area directly affected by activities on the Allegheny National Forest include four counties: Elk, Forest, McKean, and Warren counties in Pennsylvania. Some local influence also extends into various adjacent counties in Pennsylvania and New York State. The 1980 population of the four county area was 141,494, a decrease of 0.6 percent over 1970.

Within the surrounding counties of the Allegheny National Forest, There are no communities that are significantly dependent on the Forest. Individuals within various communities are employed by industries that are in part dependent on supplies of resources from the Allegheny National Forest. The forest products and recreation sectors of the economy currently each provide four percent of the jobs in the four county area.

In each alternative, the Allegheny National Forest contributes roughly 5 percent to the area's employment. The number of jobs attributable to Allegheny National Forest management ranges from 2,356 jobs per year in Alternative B to 2,955 jobs per year in Alternative C. The breakdown of these jobs by sector of the economy depends on the emphasis of each alternative (see Appendix B, pages B-106 to B-112 for details).

Economic Values and Responses to Management Problems

The primary reason that alternatives differ is that they respond to the management problems in different ways. This response can be partially defined by the levels of outputs, conditions, or other quantifiable benefits that are displayed in Table 2-17. A complete explanation of the indicators of response is presented on pages 2-49 to 2-65. In addition, a full discussion of each ICO, the management problems, and opportunity for resolution is in Appendix A of the Final EIS. A detailed discussion of the development of alternatives and their response to the management problems begins on page 2-4.

Table 2-17 Indicators of Response to Management Problems and National Concerns

Interest/Concern: Items of National Concern

Alt.	PNV ($MM)	Net Cash Flows Decade 1 ($MM/yr.)	Net Cash Flows Decade 5 ($MM/yr.)	Noncash Econ. Benefits Decade 1 ($MM/yr.)	Noncash Econ. Benefits Decade 5 ($MM/yr.)
E	583	-1.5	5.3	18.8	27.9
D	541	-1.3	7.4	17.4	20.7
C	521	0.4	5.5	15.2	19.7
A	506	-1.8	1.7	17.6	24.2
B	440	-0.9	4.4	16.1	17.0

Interest/Concern: Items of Local Community Concern

Alt.	Forest Dependent Jobs (number/year)	Payments to Counties ($MM/year) (Decade 1)
E	2897	1331
D	2654	1448
C	2955	1777
A	2399	1113
B	2356	1129

Interest/Concern: Management Problem 1 - Providing Developed Rec. New and Expanded Facilities around Allegheny Reservoir

Alt.	Campgrounds	Resorts	Boat Launches
E	2	1	0
D	3	0	0
C	3	2	0
A	0	0	0
B	0	0	1

Interest/Concern: Management Problem 2 - Providing Developed Rec. Acres and Percent by ROS Class

	ROS Class							
	SPNM		SPM		RN		R	
Alt.	M Acres	%	M Acres	%	M Acres	%	M Acres	%
E	10	2	139	28	353	70	1	<1
D	30	6	131	26	343	68	1	<1
C	15	3	76	15	412	82	1	<1
A	10	2	296	59	197	39	1	<1
B	11	2	220	44	272	54	1	<1

Interest/Concern: Management Problem 3 - Timber Management
Timber Volume Production and Harvest Method

Alt.	Timber Harvest Decade 1 (MMBF/yr) Saw	Pulp	Total	LTSY	Harvest Method Decade 1 (M Acres) Final Harvest	Sel.	Thinning
E	31	58	89	89	7	107	43
D	38	57	95	95	33	7	94
C	54	49	103	103	67	2	6
A	20	29	49	49	3	67	11
B	26	36	62	62	31	18	11

Interest/Concern: Management Problem 4 - Wildlife Habitat
Acres of Non-Structural Habitat Maintenace and Improvement

Alt.	Thousand Acres of Habitat Improvement (Decade 1)
E	31
D	24
C	17
A	35
B	20

Differences and Similarities of Individual Alternatives

This section summarizes the most significant differences and similarities as related to items displayed in Table 2-17. A detailed description of each alternative is in Appendix B beginning on page B-174. Also, see Chapter 2 of the Final EIS beginning on page 2-23. Alternatives are discussed in terms of decreasing PNV.

Alternative E (RPA)

Alternative E has the highest present net value of the alternatives. The high PNV is because of the production of noncash economic benefits produced in the alternative. It ranks second to Alternative C in developed recreation facilities around the reservoir. The emphasis in timber managment in this alternative is on selection managment and long rotation. Habitat will be improved for a variety of species.

The following emphases in Alternative E caused significant reductions in present net value:

- o no even-aged management on poor quality sites
- o require thinnings in higher quality timber stands
- o provide 10,000 acres of non-motorized recreation

- manage intensively for wildlife and dispersed recreation
- longer timber rotations to grow large trees
- retain high visual quality around the Allegheny Reservoir
- intensively manage 11,000 acres of aspen for grouse production
- 9,719 acres managed for Wilderness and 23,100 acres as National Recreation Area.

The present net value of Alternative E is $583 million, a reduction of $36 million from the maximum present net value benchmark. The first two emphases, no even-aged management on poor-quality sites and requiring thinnings, reduced present net value by $15 million.

Addressing the remaining emphases, except wilderness, caused the most significant reduction in present net value, $50 million. National Recreation Area and Wilderness reduced present net value an additional $6 million.

Alternative E ranks first among alternatives in PNV. It also ranks first in noncash benefits. In terms of net cash flow, Alternative E ranks fourth among the five alternatives in decade 1 and third in decade 5. The high ranking of this alternative in PNV and noncash benefits is because of its emphasis on nonpriced benefits. Investments are high in the dispersed recreation and wildlife areas. Net cash flows are losses because even though timber volume increases, most of the timber is harvested through uneven-aged management, which has higher costs and lower returns than for harvesting timber than in even-aged management.

Alternative D (Preferred Alternative)

Alternative D provides three new and/or expanded campgrounds around the reservoir. This is more than is provided in Alternative E. The only other alternative to have three new or expanded campgrounds in Alternative C. Large areas of semi-primitive recreation will be provided. The amount of semi-primitive nonmotorized recreation is higher in this alternative than any other. In timber management the emphasis is to increase sawtimber volume by 45 percent over the current situation. Even-aged management will be the dominate silvicultural system. There is a moderate increase in wildlife habitat investments with acres of habitat improvement being greater in this alternative than in Alternatives C and B but less than Alternative E and A.

The following emphases in Alternative D caused significant reductions in present net value:

- o manage at least 15 percent of the Allegheny for semi-primitive recreation
- o manage dispersed recreation and wildlife at a medium level of intensity
- o intensively manage 7,000 acres of aspen for grouse production
- o recommend 9,719 acres for Wilderness and 23,100 as National Recreation Area.

The present net value of Alternative D is $541 million, a reduction of $78 million from the maximum present net value benchmark. Managing for semi-primitive recreation and medium intensities of recreation and wildlife reduced present net value by $36 million. Wilderness and National Recreation Area causes an additional $5 million decrease in present net value.

Alternative D ranks second in PNV and emphasizes both priced and nonpriced benefits. It ranks first in net cash flow in decade 5 and third in decade 1. It also ranks third in noncash benefits in decade 1 and decade 5. The reason it ranks third in noncash benefits is because in Management Areas 1, 2, 3 and 6.2 the investments in recreation and wildlife are moderate. It increases to first in net cash flow by decade 5 because of a rise in hardwood sawtimber between decades 1 and 5. Although the increase in volume is not as great as Alternative E, Alternative D uses even-aged management which is lower in costs for timber management than the silvicultural system used in Alternative E.

Alternative C

This alternative ranks third in PNV. The alternative emphasizes priced market benefits. It ranks highest in number of forest dependent jobs and payments to counties. The amount of recreation development around the reservoir is higher in this alternative than any other. As in Alternative D, this alternative calls for three new and/or expanded campgrounds. In addition, two resorts are planned. Alternative C ranks highest in the number of acres in a roaded natural recreational setting. The alternative ranks first in both timber and sawtimber produced in the first decade as well as long-term sustained yield. Like Alternative D the predominate silvicultural system is even-aged managment. Wildlife investments are minimal.

The following emphases in Alternative C caused significant reductions in present net value:

- o supply a non-declining yield of hardwood sawtimber
- o low intensity management of dispersed recreation and wildlife
- o meet high visual quality objectives around the Allegheny Reservoir
- o manage 9,719 acres for Wilderness and 23,100 for National Recreation Area.

The present net value from Alternative C is $521 million or $98 million less than the maximum present net value benchmark. The most significant reduction in present net value, $65 million, was caused by meeting low intensity recreation and wildlife management as well as meeting visual quality objectives around the Allegheny Reservoir.

Meeting the non-declining yield of hardwood sawtimber emphasis caused a $26 million reduction in present net value. The benefit of this emphasis is somewhat greater stability in the local lumber industry.

Managing for Wilderness and the National Recreation Area reduced present net value by $16 million.

Alternative C ranks third in PNV and is the only alternative with a positive net cash flow in decade 1. This alternative ranks first in noncash benefits. Nonpriced benefits are not emphasized. The reason there is a positive net cash flow in decade 1 is because of a requirement of hardwood sawtimber. This requirement results in Alternative C having the largest sawtimber of any alternative in decade 1. The price for this is a lower PNV and a second place ranking in net cash flows in decade 5. PNV can be maximized by allowing hardwood sawtimber to be harvested later than decade 1.

Alternative A

Alternative A emphasizes priced non-market benefits. There are no development planned around the reservoir. There are some small developed sites planned throughout the Forest in support of semi-primitive dispersed recreation. Over 60 percent of the Forest will be managed for semi-primitive recreation opportunities. Timber volumes are lower than the current situation alternatve. As in Alternative E long rotation even-aged managment and selection harvest techniques will be used. This alternative provides the greatest amount of non-structural habitat improvement.

The following emphases in alternative A caused significant reductions in present net value:

- o reduced levels of total timber harvest and hardwood sawtimber
- o retaining all oak stands
- o longer timber rotations to grow larger trees
- o high intensity of wildlife and dispersed recreation management
- o intensively manage 11,000 acres of aspen for grouse production
- o manage 9,719 acres for Wilderness and 23,100 for National Recreation Area

Alternative A has a present net value of $506 million, a decrease of $112 million from the maximum present net value benchmark. The first two emphases listed above, reduced timber harvests and retaining oak stands caused the most significant reduction in present net value. Together they account for a decrease of $65 million in present net value.

Requiring longer timber rotations, intensive wildlife management, and several other less significant emphases caused an additional reduction of $15 million in present net value. National Recreation Area and Wilderness management reduced present net value by $5 million.

Alternative A ranks fourth in PNV and last in net cash flows. In noncash benefits it ranks second to Alternative E in decade 1 and decade 5. The reason is the emphasis of this alternative is nonpriced benefits.

Alternative B (Current Situation)

Alternative B portrays the current managment situation. It is the alternative that provides the fewest number of jobs. The only new facility around the reservoir is a boat launch. The objective in dispersed recreation is to provide 50 to 60 percent of the Forest in a roaded natural setting. In the timber management Alternatives C, D, and E all produced greater volume. Like Alternatives C and D the predominate silvicultural system is uneven-aged managment. Investment levels for habitat improvement are low.

The following emphases in Alternative B caused significant reductions in present net value:

- hardwood sawtimber must be at least 45 percent of the total harvest volume (recent historical percentage)
- timber harvest volumes must equal RPA targets
- final harvest acreages must be at least 2,000 acres
- no oak and conifer conversions are permitted
- low intensity of wildlife and dispersed recreation management
- maintain high visual quality objectives around the Allegheny Reservoir
- manage 9,719 acres for wilderness and 23,100 for National Recreation Area
- no herbicide use.

Alternative B has a present net value of $440 million, a decrease of $179 million from the maximum present net value benchmark. Meeting the first four emphases (hardwood sawtimber ratio, meeting RPA targets, final harvest acreages, and oak-conifer conversions) caused a $44 million reduction in present net value primarily because of lower timber volumes than the benchmark.

Low intensity management for wildlife and dispersed recreation and maintaining high visual quality objectives around the Allegheny Reservoir caused an additional $76 million reduction in present net value. Management for National Recreation Area and wilderness reduced present net value $8 million.

Requiring no herbicide use reduced the present net value of Alternative B by an additional $20 million.

Alternative B has the lowest PNV of all alternatives. It also ranks last in noncash benefits and near the bottom in net cash flow. The reason is there is little emphasis on recreation or wildlife and timber outputs do not change from current.

Wilderness Acreage

All alternatives contain the same wilderness acreage. The "Pennsylvania Wilderness Act of 1984" established the Hickory Creek Wilderness (9,337 acres) and the Allegheny Islands Wilderness (368 acres). The act also established the Allegheny National Recreation Area (23,100 acres).

Language contained in the act released other potential wilderness areas from consideration for the duration of this planning cycle.

OTHER COMPARISONS

Comparisons to the RPA Targets

Although the Resources Planning Act (RPA) targets for the National Forests are not binding, a comparison must be made to the alternatives. Of the final alternatives, Alternative E most closely compares to the 1980 RPA targets.

Table 2-18 compares the 1980 RPA targets to the level of goods, services, and activities that result from Alternative E. The comparison is displayed with all values expressed in average annual outputs from the years 2025-2035.

Nearly all recreation targets in Alternative E exceed the RPA targets except in rural recreation.

Trail construction targets are met in earlier decades.

The Forest was involved in developing the 1980 RPA targets and now feels the amount reported in rural RVD's was in error. Thus, the RPA targets for rural RVD's could not be met in Alternative E or any alternative.

As stated earlier, no market demand for grazing allotments exists. Thus, the range targets will not be met. The RPA reforestation target of 6,300 acres is close to the level of reforestation in Alternative E. The RPA targets for land acquisition will not likely be needed to meet resource outputs.

Table 2-18 Comparison of Alternative E to the Annual RPA Targets for Years 2025-2035

MANAGEMENT ACTIVITY	UNIT OF MEASURE	RPA Target	Alt. E Output
Recreation Use			
Primitive	Thousands of RVD's	0	0
Semi-Prim Non-Motorized	Thousands of RVD's	40	24
Semi-Prim Motorized	Thousands of RVD's	400	469
Roaded Natural	Thousands of RVD's	1,962	1,640
Rural	Thousands of RVD's	1,600	942
Urban	Thousands of RVD's	0	0
Trail Const./Reconst.	Miles per Year	20	0
Wildlife and Fish			
Non-structural Habitat Mtnce. and Imp. - WL	Thousands of Acres	1	4.5
Non-Structural Habitat Improvement - Fish	Thousands of Acres	.18	.17
Structural Habitat Improvement - Fish	# of Structures	59	110
Range			
Grazing Use	Thousands of AUM's	.2	0
Timber			
Program Sale Offered	Million BF/year	63	89
Reforestation[1]	Thousands of Acres	6.3	6.1
Timber Stand Improvement	Thousands of Acres	3.0	1.0
Water			
Meeting Water Quality	Millions of ACFT	1.03	.84[3]
Minerals			
Minerals Leases/Permits	Operating Plans	1,188	1,654
Human and Community Devel.			
HRP	Enrollee Years	18.7	
Protection			
Fuelbreak & Fuel Tmt.	Thousands of Acres	0	0
Lands			
Purchase & Acquisition	Thousands of Acres	2.57	.3
Soils			
S&W Resource Improvement	Thousands of Acres	.08	0
Facilities			
Road Const./Reconst.[2]	Miles per Year	6	9
Costs			
Total Funds	Millions of $/year in 1978$	13	7

1 Includes 1/3 of selection cut acres
2 Traffic Service Level A, B, C
3 Supporting documentation shown in Chapter 2

Timber Suitability Comparisons

Table 2-19 shows the acres of land suitable for timber production in each alternative, with Alternative B representing the current situation. The differences displayed between the alternatives for the acres of land not appropriate for timber production (line 9) relate primarily to the following: 1) the amount of new wildlife openings, 2) the amount of Management Area 9, and 3) for Alternative D2 the new land area cleared for oil and gas production.

Alternatives A and D2 reflect the highest acreages of land not suited for timber production, Alternative A because of new wildlife openings and Alternative D2 because of the new clearing for oil and gas production. Alternative C has the lowest acreage in this category due to the low emphasis on new wildlife openings and few acres in Management Area 9. Alternative B has the same emphasis on new wildlife openings as Alternative C but has more acres assigned to Management Area 9. Alternatives D and E fall in the middle of the range, and the variation between them is due largely to differences in the amount of new wildlife openings.

TABLE 2-19 TIMBER RESOURCE LAND SUITABILITY

Classification (Acres)	Alternative A	B	C	D	(D2)	E
1. Water	8,305	8,305	8,305	8,305	8,305	8,305
2. Non-Forest Land	22,561	22,561	22,561	22,561	22,561	22,561
3. Forest Land	479,664	449,664	479,664	479,664	479,664	479,664
4. Forest Land Withdrawn from Timber Production	15,621	15,621	15,621	15,621	15,621	15,621
5. Forest Land Not Producing Crops of Industrial Wood	0	0	0	0	0	0
6. Forest Land Physically Not Suited:						
Irreversible Damage Likely To Occur	450	450	450	450	450	450
Not Restockable Within 5 Years	450	450	450	450	450	450
7. Forest Land-Inadequate Info[1]	0	0	0	0	0	0
8. Tentatively Suitable Forest Land (Item 3 minus items 4, 5, 6, & &)	463,143	463,143	463,143	463,143	463,143	463,143
9. Forest Land Not Appropriate for Timber Production[2]	53,818	36,578	30,101	43,118	55,667	46,492
10. Not Suited Forest Land[3] (Items 4, 5, 6, 7, & 9)	70,339	53,099	46,622	59,639	72,188	63,013
11. Total Suitable Forest Land (Item 3 minus item 10)	409,325	426,565	433,042	420,025	407,476	416,651
12. Total Net National Forest Area (Items 1, 2, & 3)	510,530	510,530	510,530	510,530	510,530	510,530

1 Lands for which current information is inadequate to project responses to timber management.

2 Lands identified as not appropriate for timber production due to: (1) assignment to other resource uses to meet Forest plan objectives; (2) assignment to other uses to meet management requirements; and (3) not cost efficient in meeting Forest plan objectives over the planning horizon.

3 Lands identified as not suited for timber production are examined every ten years and analyzed through the land management planning process to determine their suitability for timber production.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of implementing the Forest Plan alternatives are described in terms of physical, biological, social and economic effects.

Environmental consequences are the anticipated results of applying different combinations of management prescriptions to land areas. The consequences vary for each Forest Plan alternative because different mixes of prescriptions produce different consequences.

Chapter 4 of the FEIS contains two major sections. The first describes the effects of individual management practices. The second major section describes the cumulative effects of all management practices on each component of the environment (soils, vegetation, wildlife, and so forth). Other sections describe mitigation measures, effects that cannot be avoided, short-term uses and long-term productivity, and irreversible or irretrievable commmitments of resources.

Effects of Individual Management Practices

Table 2-20 (see page 2-87) summarizes the elements of the environment which may be affected by management practices when implementing the Forest Plan alternatives.

Cumulative Effects

Cumulative environmental consequences of the alternatives result from applying combinations of management practices. The mix of prescriptions under each alternative produces different levels of resource outputs, goods, and services, including recreation benefits, wildlife habitats, and timber production.

Forest-wide and management area standards and guidelines, explained in Chapter 4 of the Forest Plan, provide a base level of protection for all resources and measures to mitigate adverse environmental effects. These base levels of protection are incorporated into all management prescriptions. Therefore, none of the alternatives produce unacceptable environmental consequences. However, the level of environmental protection above the base line level differs among the alternatives.

Table 2-20 Potential Effects of Management Practices on Environmental Elements

"S" denote elements of the environment that have the potential to be significantly affected by management practices. Effects will be confined to acceptable levels.

"M" indicates that Forest Plan standards and guidelines mitigate the effects of a particular practice on the specified element of the environment.

A "Blank" indicates the practice has insignificant or no effects.

	AFFECTED ELEMENTS OF THE ENVIRONMENT																					
Management Problem and Practices	Soil and Landform	Energy Minerals	Mineral Materials	Other Mineral Resources	Visual Resources	Cultural Resources	Water Quality	Noise	Roads	Riparian Areas	Vegetation	Wildlife	Fish	T, E, Species of Concern	Recreation Opportunities	Wilderness	Special Rec Designations	Exp Forest/Research Nat Areas	Plan/Program - Other Agencies	Private Property Rights	Social Economic Conditions	
1. DEVELOPED RECREATION																						
Developed Recreation Sites	M:			M:	M:	M:	S:	M:	M:			M:	M:	S:		M:		S:	M:	*:		
2. DISPERSED RECREATION																						
Dispersed Recreation Mgt.	M:			M:	M:	M:	S:	M:	M:			M:	M:	S:			M:	M:	M:	*:		
3. TIMBER MANAGEMENT																						
Even-aged Silviculture	S:			S:	M:	S:	S:	S:	M:	S:	S:	M:	M:	S:		M:		S:	M:	*:		
Uneven-aged Silviculture																						
Even-aged Thinning	S:			M:	M:	S:	S:	S:	M:	S:	S:	M:	M:			M:		S:	M:			
Roads	S:	S:	S:	S:	M:	S:	S:	S:	M:		S:	M:	M:	S:		M:						
Herbicide Treatment	M:			S:	M:	M:			M:	S:	M:	M:	M:									
Fertilization and Fencing					M:	M:			M:	S:			M:									
4. WILDLIFE HABITAT																						
Non-Structural Hab. Imp.	M:			S:	M:				S:	S:	S:	S:	M:	S:				M:		*:		
Structural Wildlife Hab. Imp.	M:			M:	M:				S:		S:		M:	S:				M:				
Structural Fish Hab. Imp.					M:				S:			S:	M:	S:				M:				
5. PRIVATE OIL/GAS DEVELOPMENT																						
Energy Mineral Developments	S:	S:	S:	S:	M:	S:	S:	S:	S:	S:	S:	S:	S:	S:	M:	M:	S:	S:	S:	*:		
Mineral Materials Development	S:	S:	S:	M:	M:		S:	S:					M:	S:		M:			S:			
6. WILDERNESS																						
Wilderness Management		S:	S:	S:		S:			M:	S:	S:		M:	S:	M:			S:	M:	*:		

*Social and Economic Effects are discussed in Section D, Cumulative Effects.

Possible significant cumulative environmental consequences of the alternatives are listed below:

Soils

Cumulative effects on soil productivity are primarily a result of activities that physically disturb the soil and landform or remove the surface from production. Alternatives A and B have the least effect on soil productivity whereas Alternative E has the most.

Energy Minerals

Consumption of the nonrenewable energy mineral resource is affected by the rate of energy mineral development and the acreage of federal minerals removed from production. Under the high energy demand scenario within any alternative, the rate of energy production will be two and a half times greater than the low demand scenario. The amount of federal mineral ownership totals about 30,000 acres, of which 40 percent is withdrawn from mineral production in each alternative.

Mineral Materials

The amount of mineral materials used and the acreage of the Forest withdrawn from entry for these materials summarize the effect on this resource. The acreage withdrawn from entry is the same for all alternatives, approximately 6.5 percent of the total Forest acres. However, the amount of mineral materials extracted does vary between alternatives based primarily on the new road construction. Alternatives A and B rank the lowest in total rock consumption, and Alternatives C and D rank the highest. Rock consumed under a high oil and gas demand scenario would increase extraction about two and a half times that in a low demand.

Visual Resource

Cumulative effects of change in the natural appearing forest are measured through area in continuous and broken forest canopy as well as the amount of road building. Alternative A shows the least change from the present condition in the natural appearing continuous forest canopy with E ranked next. Alternative C would show the most change in the natural appearing landscape with over one half the forest in broken canopy.

Alternative D ranks only slightly less than C. The effect of a high rate of oil and gas development on any alternative could increase areas where change from the natural appearing forest is evident by 25 percent.

Conversely, visual variety increases with the increase in broken forest canopy. Alternative E would have the most visual variety and A the least.

Cultural Resources

Cultural resources will be protected in all alternatives. Prior to earth-disturbing activities, a survey is made to locate and recommend protection measures for any prehistoric or historic sites or artifacts found in the area. In addition to protecting cultural resources, such surveys also add to the understanding of past ways of life in this part of Pennsylvania.

Water Quality

Estimated changes in sedimentation rates were used to indicate the cumulative effect of management practices on water quality. The rate of sediment production in B is 50 percent higher than from unmanaged forest land but only 11 percent of that from crop land. Alternative B ranks lowest of the alternatives in production of sediment but is closely followed by Alternative A. Alternative E ranks the highest in production of sediment being 23 percent higher than B. Alternatives C and D are moderate at 15 and 18 percent higher, respectively.

Under all alternatives, sediment generated from oil and gas development under the high demand scenario would be more than three times that produced under the low demand scenario. Production of wastewaters, including production brines, and the level of oil spills would also be expected to increase proportionately if a high rather than low level of oil and gas development occurs.

Noise

All alternatives increase noise levels from the present with Alternatives A and B being the lowest and C the highest. Alternatives D and E produce moderate noise levels. The effect of a high oil and gas demand would increase noise levels in all alternatives equally with the net change being more significant in the quieter alternatives.

Roads

Total road needs and traffic management vary by alternative. Alternative A requires the smallest road system but only 60 percent will be closed to public traffic. This reflects the need for more frequent use for uneven-aged timber management. Alternatives E, D, and C require larger road systems, respectively, but C and D close or restrict public use on over 80 percent of the road system compared to the 60 percent in Alternative E. Alternative B requires a somewhat smaller road system but also proposes to close nearly 80 percent of them to public use. The rate and extent of oil and gas development would not have a significant effect on the size of the Forest Service road system in any alternative.

Riparian Areas

In all alternatives, riparian areas would be managed to enhance and protect riparian dependent values. The potential for improvement in riparian area values is greatest in those alternatives with the most wildlife habitat improvement practices. The alternatives rank C, B, D, E, and A respectively, with C being the lowest in potential for riparian area value improvement. Under a high level of oil and gas development, less wildlife habitat improvement would occur, including less work in riparian areas for all alternatives.

Vegetation

The percent of the Forest in the major timber types is expected to change significantly from the present condition in Alternatives A, B, and C. In Alternative A, up to one third of the Allegheny hardwoods will convert naturally to Northern hardwoods with 15 percent converting in Alternative B. In Alternative C, about 40 percent of the oak would convert to Allegheny hardwoods.

Horizontal diversity, which relates to age class distribution, would be greatest in Alternatives C and D. Old growth increases in all alternatives with A being the highest at 43 percent and C the least with 11 percent, versus the present condition of one percent. Under a high level of oil and gas development, slight increases would be expected in each alternative in the Northern hardwood timber type and the amount of old growth.

Wildlife

The cumulative effect of all the management practices result in maintaining minimum viable populations of all the management indicator species. An increase in population for about half the species can be expected in each alternative. Alternatives A and E emphasize increases in species related to old growth and mature deciduous forest, whereas the other alternatives show increases in species related to regenerating and early successional stages of deciduous forest. If a high level of oil and gas development occurs, decreases in population will occur across each alternative, particularly in species sensitive to human disturbance.

Fish

Alternatives A and E provide the largest increases in both the warm and cold water habitat. Alternative B and C provide the lowest total habitat. Habitat will be provided in all alternatives to maintain viable populations of all fishes.

If a high level of oil and gas development occurs, there may be a decrease in cold water fish habitat of around 5 percent by the end of the third decade.

Threatened, Endangered, and Species of Special Concern

The effects of energy mineral development on species of special concern may not be entirely mitigated by standards and guidelines. Retaining special habitat and protecting species from disturbance during the breeding season is only possible if the oil and gas operator is willing. This applies equally to all of the alternatives.

Recreation Opportunities

The cumulative effect of all management practices can be seen in the resulting mix of recreation opportunities provided in each alternative. Alternative A emphasizes a high demand of semi-primitive recreation opportunities whereas C emphasizes the Roaded Natural/Rural opportunities. Alternatives D and E provided some increases in all classes of recreation opportunity with Alternative E showing the highest total increase of all alternatives. If a high level of oil and gas development occurs, use will

generally decline by 9 percent. The shift in the type of recreation opportunity to roaded natural may be most evident in Alternatives A and then B and D because of their greater emphasis on semi-primitive recreation opportunities.

Plans and Programs of Other Agencies

All alternatives are compatible with other agencies plans and programs.

However, payments to counties do vary by alternative and reflect the amount and value of timber harvested, the level of recreation site development, and the amount of land withdrawn from revenue producing activities such as wilderness areas. From the lowest dollar return to the highest, the alternatives rank A, B, E, C, and D.

Experimental Forest/Research Natural Areas

Energy mineral development may affect these means by altering the natural environment, the main attribute needed if they are to continue as research areas. Any research studies or progress could be impacted by vegetation removal/alteration and soil disturbance.

Private Property Rights

In all alternatives the exercise of private property rights will be honored. In some cases, the federal government will acquire these rights to protect surface resource uses. There is a potential that private mineral development may be affected if economic rock sources for roads and well sites are not available. This possibility increases as the Forest Service use of these materials increases.

Social and Economic

Social and economic effects of the Forest Plan alternatives can be placed in two categories, effects on local economy and lifestyle changes on social groups. The effects on local economy was measured in terms of total jobs provided. Alternatives C and E ranked highest respectively followed by D. Alternatives A and B offered the fewest total jobs. Implementing any alternative would not significantly affect the lifestyle of social groups associated with the Forest.

Mitigation Common to All Alternatives

Soils and Landform

Standards and guidelines for the major soil groups on the Forest ensure that we maintain soil productivity and minimize soil loss. Mitigation measures include:

-- Seasonal restrictions on logging or requirements for special logging equipment to reduce compaction;
-- Use of surfacing or geotextiles in road construction;
-- Restriction on the size of the area occupied by skid trails and landings;
-- Use of cable logging or other special techniques on steep slopes;
-- Erosion and sediment control techniques.

Energy Minerals and Mineral Materials

Standards and guidelines for mineral resources are designed to protect valid existing rights, encourage prudent development and use of mineral resources, and minimize the effect of development on surface resource values.

-- Use and maintenance of National Forest roads.
-- Requirements and techniques for oil and gas well developments.
-- Operating and implementation plans for rock pit development.

Visual Quality

Standards and guidelines for each management area are designed to minimize the adverse effects of management practices, such as timber harvesting and oil and gas development. These mitigation measures are keyed to the visual quality objectives for specific land areas. Specific techniques used to meet these objectives are detailed in Landscape Management Handbook, and include:

-- Facility, road, and timber sale layout and design
-- Use of vegetative screening, native materials, or earthtone colors to minimize the visual impacts
-- Size, shape, and timing of projects.

Cultural Resources

Cultural resources surveys are conducted in all areas where earth-disturbing activities are planned. Sites identified by such surveys will be evaluated and protected as appropriate to their significance. To protect sites, proposed activities may be modified by:

-- Avoiding the site and its immediate vicinity;
-- Evaluating and interpreting the site before it is disturbed.

Water Quality

A set of specific standards and guidelines is provided for each major resource whose management might adversely impact water quality. Such resources include timber, oil and gas, transportation, and recreation. Key mitigation measures are:

-- Planning and constructing permanent roads, temporary roads, skid trails, landings, and well sites to reduce erosion and sedimentation;
-- Minimizing stream crossings by roads and trails;
-- Erosion/Sediment control measures such as using filter strips to trap sediment;
-- Stabilizing disturbed soil quickly;
-- Establishing buffer strips along streams in herbicide and fertilization projects;
-- Complying with water pollution regulations.

Roads

The adverse effect of management practices on roads is usually damage to the road surface caused by inappropriate use. This can be mitigated by designing, building, and managing roads for the anticipated traffic.

Riparian Areas

Standards and guidelines for riparian resources ensure that these resources will be given preferential consideration when managing riparian areas. Management of riparian areas may include activities such as:

-- Locate recreation sites appropriately in floodplains and use erosion and sedimentation control practices;
-- Limit streamside vegetation removal;

Mitigation

-- Locate new roads outside of riparian areas;
-- Minimize stream crossings;
-- Design any necessary stream crossing structures such that streamflow patterns are not altered and fish passage is not impeded;
-- Dispose of wastewater from oil developments and sewage from recreation developments in accordance with state and federal regulations.
-- Management of vegetation in riparian areas for wildlife habitat, such as winter conifer cover along streams or emergent aquatic vegetation around impoundments;
-- Maintenance of water quality and fish habitat by avoiding excessive soil disturbance and using filter and buffer strips.
-- Avoid constructing facilities in floodplains and wetlands unless no practical alternative exists.

Vegetation

The effects of various managment practices on vegetation are mitigated by standards and guidelines within the Forest Plan. This includes guidance on such activities as:

-- Maintenance of vegetative species variety;
-- Integrated pest management;
-- Choice of silvicultural systems;
-- Reforestation
-- Stocking levels
-- Size of temporary openings.

Wildlife

Wildlife management standards for each management area ensure that we maintain viable populations and enhance habitat of native species forest-wide. Measures used include:

-- Proper location of developed recreation sites, roads, and trails;
-- Maintenance of a diversity of food producing trees, shrubs, and vines;
-- Providing permanent openings with vegetation that provides food, nesting, brood, or other important wildlife cover;
-- Retaining of snags and den trees;
-- Managing and constructing impoundments and potholes for waterfowl;
-- Protecting and enhancing the habitat of endangered, threatened, and species of concern;

-- Managing traffic on roads to minimize disturbance to wildlife during critical nesting and brooding periods and to avoid the overharvesting of bear and wild turkey;
-- Use herbicides which will have a minimal effect on wildlife and carefully select areas to be treated;
-- Revegetating temporary roads and other disturbed areas with plant species beneficial to wildlife.
-- Regulating the size and distribution of commercial and noncommercial cuttings.

Fish

Standards and guidelines in the Forest Plan also help to minimize the effects of management practices on fish. Measures include such activities as the following:

-- Proper location of developed recreation sites, roads, and trails;
-- Revegetation of disturbed areas;
-- Regulating public access;
-- Seasonal logging restrictions;
-- Ensuring that fish passage is provided in streams unless prescribed otherwise for fisheries management purposes.
- Using both buffer and filter strips as necessary;
- Plugging abandoned wells;
- Proper disposal of waste water from oil developments and from developed recreation sites;
- Improving fish habitat in the Allegheny Reservoir and in stocked streams;
- Applying approved herbicides in a manner in which minimizes the likelihood of it entering streams.

Threatened, Endangered, and Species of Special Concern

The effects of all management practices on threatened and endangered species and on species of special concern are mitigated by standards and guidelines, with one exception. The effects of private energy mineral development on species of concern may not be entirely mitigated. Mitigation measures include the following:

-- Proper location of developed recreation sites, roads, trails, timber cutting units, herbicide treatment areas, wildlife and fish habitat improvement projects, reforestation projects, and mineral materials development sites;
-- Regulating public access and other management practices during critical time periods;

Mitigation

-- Enhancing existing habitat and creating new habitat in desirable locations.

Recreation Opportunities

Standards and guidelines in each management area, primarily for recreation and wildlife, mitigate the effects of other activities on recreation. These mitigation measures include the following:

-- Timing of activities;
-- Forest pest management as appropriate;
-- Law enforcement;
-- Road use management;
-- Size, shape, and visual screening of project areas;
-- Treatment of timber harvest residues;
-- Using native vegetation and materials where possible.

Wilderness

Energy mineral development and wilderness use may have an effect on wilderness, but the standards and guidelines will help mitigate these potential effects. They include the following:

-- Purchasing mineral rights from private individuals on a willing seller basis, thereby withdrawing them from development;
-- If private development does occur, use vegetative screening, earth-tone colors, minimum clearing, burial of all utility and pipelines, electric motors to pump wells, and locate as many facilities as possible outside the area;
-- Permit use up to carrying capacity or until over-use, visitor conflicts, or unacceptable environmental damage occurs;
-- Encourage recreation use in areas outside of the wilderness.

Special Recreation Designations

Standards and guidelines mitigate the effects of other uses on special recreation areas such as the Tionesta Scenic Area, the Heart's Content Scenic Area, and the Allegheny National Recreation Area. Mitigation measures which help minimize evidence of human disturbance and retain the primitive setting include the following:

-- Proper design and location of other uses;
-- Screening, shape, and size of project areas;
-- Timing of activities;
-- Road management;
-- Using earth-tone colors;
-- Using native species and materials when possible.

Plans and Programs of Other Agencies

The potential for conflict or duplication of effort with the plans or programs of state, local, or other federal agencies could exist if mitigation measures had not been developed in the Forest Plan. These require appropriate coordination with them regarding resource management and enforcement. These agencies have all had a chance to comment on the draft planning documents, and many have taken advantage of that opportunity.

Private Property Rights

Developed recreation, dispersed recreation, timber management, and wilderness management can all affect the exercise of private subsurface rights. Standards and guidelines mitigate these effects.

-- If subsurface rights are acquired by the federal government to protect surface resource values, paying fair market value mitigates the effect of this on the private owner.
-- Law enforcement, gating of roads, and notifying the public of private property rights will help minimize vandalism and theft of oil and gas equipment by dispersed recreationists.
-- Burial of pipelines and electric lines, cooperative road use agreements, and coordination of activities between timber operators and oil and gas developers will help mitigate the effects of timber management on minerals.

CHAPTER 3

Affected Environment

CHAPTER 3

AFFECTED ENVIRONMENT

This chapter profiles the existing environment of the Allegheny National Forest, including its physical, biological, social, and economic features. Features described are limited to those that would be affected if any of the alternatives, including the preferred, were implemented.

Information in this chapter becomes, therefore, the baseline against which readers can measure or evaluate the environmental consequences analyzed in Chapter 4.

The chapter contains the following sections and subsections:

A. Physical Environment (Page 3-2)

--Soils and Landform
--Energy Minerals
--Mineral Materials
--Other Mineral Resources
--Visual Resources
--Cultural Resources
--Water Quality
--Noise
--Roads

B. Biological Environment (Page 3-17)

--Riparian Areas
--Vegetation
--Wildlife
--Fish
--Threatened, Endangered, and Species of Special Concern
--Recreation Opportunities
--Wilderness
--Special Recreation Designations
--Experimental Forest and Research Natural Areas

C. Social and Economic Environment (Page 3-32)

--Plans and Programs of Other Agencies
--Private Property Rights
--Current Social Situation
--Current Economic Situation

A. PHYSICAL ENVIRONMENT

SOILS AND LANDFORM

The Allegheny National Forest is located in the unglaciated physiographic area known as the Allegheny High Plateau. Over geologic time, the Allegheny River and its many tributary streams have cut deep, V-shaped valleys into this plateau. As a result, the plateau is deeply and widely dissected by creeks and streams. Elevations range from 1,000 to 2,300 feet. The terrain of the Forest can be classified into four categories:

Table 3-1 Landtype Groups on the Allegheny National Forest

Name	Description	Percentage Of Forest
Plateau	Relatively flat and undissected ridge tops	38%
Moderate Slope	Hillsides with ground slopes less than 40%	55%
Steep Slope	Hillsides with ground slopes greater than 40%	5%
Bottomland	Relatively flat areas along large streams	2%

Soils were formed in residual, colluvial, and alluvial materials which were derived primarily from shales and sandstones. Soil drainage and slope are the two most important soil characteristics influencing the effects of management practices on the environment.

Plateau soils are generally well to moderately well drained, with the water table usually deeper than 18 inches below the surface. Soils that are poorly drained, with a water table at or near the surface, may also occur on plateaus. Slopes vary from level to about 25 percent but are usually less than 15 percent. Most management activities can take place on plateau soils with little potential for resource damage. All soils are susceptible to compaction, but the poorly-drained soils on flat topography are the most susceptible.

Sites in the slope landtypes may be almost vertical, but most have slopes less than 40 percent. The most serious erosion problems on the Forest are associated with soils on steep slopes. Timber harvesting with current methods of log

skidding is difficult on the steeper slopes. Colluvial soils, at the base of the slope, tend to be wet and are susceptible to compaction and erosion.

Bottomland soils vary in drainage from well to poorly drained. These soils are the most fertile on the Forest, but they are subject to periodic flooding. Good sources of sand and gravel may be found on terraces along major streams, such as the Allegheny and Clarion Rivers and Tionesta Creek.

The USDA Soil Conservation Service recently completed the mapping of soils on the Forest. These maps and soil interpretations are available in the Supervisor's Office and District offices on the Forest.

ENERGY MINERALS

The Allegheny National Forest lies in the heart of the oil and gas producing region of Pennsylvania. The first oil well in the United States was drilled in 1859 about 40 miles south of the present Forest boundary. The region produces high quality Pennsylvania-grade crude oil. This paraffin-based crude supplies 25 percent of the country's lubricating oil, although it comprises only one percent of total U.S. oil production.

The Forest occupies 26 percent of the combined acreage of four of the top five oil-producing counties in Pennsylvania. In 1981, these four counties produced 66 percent of the state's total crude oil production of 3.6 million barrels.

The rock formations that contain the oil and gas reserves have low permeability and porosity, which means that oil and gas are tightly held in the formation. The oil formations are also at relatively shallow depths, with oil wells generally drilled to depths of 1,000 to 2,000 feet. These two characteristics of the oil fields lead to close well spacing, usually every 400 to 500 feet, or one well every five acres. In addition to the well sites themselves, land is also cleared for access roads to each well, production and storage facilities, and pipeline rights-of-way.

Development of the mineral estates beneath the Forest produces a high-grade lubricating oil. The average current value of production from private oil/gas development ranges from $35-50 million annually. This figure is based on approximately 10,000 wells producing 150 barrels of oil per

year at $32.00 per barrel. Fluctuations in this figure result from changes in the number of wells, production rates, and the price per barrel.

Large quantities of natural gas are also produced with the crude oil. If transmission pipelines are available, the gas is collected and marketed; otherwise, the gas is vented to the air or flared. In recent years, more collection and transmission pipelines have been constructed on the Forest, so more of this nonrenewable resource will be marketed to meet the country's energy needs. In addition to the current shallow gas production, the Forest has a future prospect for major discoveries of deep gas.

The number of active oil and gas wells now on the Forest is estimated to be about 10,000. See Private Property Rights (Page 3-32) for discussion of subsurface ownership rights.

Federal Minerals

Leasing of Federal minerals beneath the Allegheny National Forest is the responsibility of the Department of Interior's Bureau of Land Management (DOI/BLM). Thirty-five percent of the Federal oil and gas ownership on the Allegheny National Forest is beneath and adjacent to the Allegheny Reservoir. The remaining ownership is composed of small tracts scattered across the Forest.

Table 4-23 displays the total acreage of federal oil, gas, and mineral ownership available for development. Of the 18,000 acres currently available, approximately 4,500 acres have been leased. In addition, 4,300 acres are "minerals only" and do not include the oil and gas rights.

Areas where significant surface resource damage cannot be mitigated may be leased subject to the requirement that no surface disturbance occur on the tract. Areas where surface occupancy may not be allowed might include developed recreation sites, islands, and areas beneath and adjacent to the Allegheny Reservoir.

An analysis of the compatibility of oil and gas activity, in relation to the other surface uses, will be completed for federally owned oil and gas rights. This analysis will be documented in an environmental assessment.

MINERAL MATERIALS

More than 50 active pits within the National Forest produce common variety minerals, such as sandstone, conglomerates, and sand and gravel. These materials are used primarily for road surfacing. The most accessible sandstone and conglomerate sources are located on plateaus and ridge tops. Sand and gravel deposits are located on terraces along major streams.

The Forest's production of common variety minerals was estimated to be at least half a million tons in 1982, with an investment value of about two million dollars. The demand for mineral materials will continue in order to meet road construction needs for both timber sales and oil/gas developments.

OTHER MINERAL/GEOLOGIC RESOURCES

Underground Space

Underground space for storage of natural gas is a vital natural resource of the Forest. At present, gas storage reservoirs underlie about 27,000 acres of the Forest. Due to favorable geologic conditions and nearness to gas transmission lines and large Eastern gas markets, the Forest is well-suited for natural gas storage. The management of underground space as a natural resource is expected to become increasingly important, not only for the existing and potential expansion of gas storage areas but also for other uses of underground space, such as deep well disposal of brine water. However, Forest Service management alternatives would have an insignificant effect on this resource.

Clay and Shale

Mining for clay and shale has taken place close to the eastern boundary of the National Forest. One operation, the Lewis Run Mine, lies less than one mile east of the Forest. Its product is used in the manufacturing of bricks and occasionally as a fill. The Forest may contain clay and shale reserves of suitable quality for use in the brick industry. However, it is doubtful that mining for brick shale will occur in the future on the Forest as brick companies have sufficient reserves on private lands.

Some potential for development of clay and shale does exist within the Pennsylvania rocks underlying the Forest. Especially valuable clays (fireclays) used in the ceramics industry are known to underlie Pennsylvania coal seams and

are called "underclays". With no chemical or mineralogical data available for the underclays, the Pennsylvania rocks on the Forest are considered as speculative for this resource.

These clay and shale minerals are economically marginal and future development is speculative. If the resource is developed, excavation would occur from small open pits.

Coal

Thin coal seams, ranging in thickness from inches to five feet, occur on the Forest. Only two mines have removed coal on a commercial scale within the Forest's boundaries. Both are small, open-pit operations just northwest of the city of Kane.

The U.S. Geological Survey has classified the Pennsylvania age rocks in the Forest as Speculative Areas, i.e., having a low potential for future development. The only coal seam on the Forest which occurs in large enough areas to support a modern open-pit mine is in the Mercer seam. This seam has had no modern mining activity and has received very limited exploitation. More coal mining has not taken place on the Forest because the coal seams most attractive for mining have largely eroded away over geologic time.

VISUAL RESOURCES

Elevations on the Allegheny National Forest range from about 1,000 to over 2,200 feet above sea level. Relatively flat ridge tops are divided by deep, steep-sided valleys; changes in elevation of 400 to 600 feet in one-half mile or less are very common. The flat to gently rolling plateau forms the highest part of the Forest and occupies about 38 percent of the area. Flat valley floors and occasional higher terraces are found along the major streams. About 2 percent of the Forest is bottomland. The slopes are the areas between the edge of the plateau and bottomlands. Slopes range from very steep (over 45 percent) to quite gentle where they merge into the plateau. About 60 percent of the Forest is slopes.

Natural erosion has exposed the bedrock in many areas around the Forest, most typically along the edges of the ridges. The most dramatic formations, with large cracks among the rocks, overhangs, and caves, are usually located on the points of ridges with particularly steep slopes. Extremely large boulders frequently are located downslope of these formations.

During the last century, the original northern hardwood forest was almost completely cut. As a result of natural succession, the present Forest is dominated by fast-growing, light-loving species, such as black cherry, white ash, red maple, and the oaks. White pine and eastern hemlock are also found. "Big tree," old-growth timber, a century or older in age, is currently found on about one percent of the Forest. The understory consists of many species, most notably American beech, sugar maple, striped maple, mountain laurel, rhododendron, serviceberry, hophornbeam, and many species of fern and herbaceous groundcovers.

Although the forest canopy is predominantly continuous, in some drainages, especially where fire has occurred, savannah or orchard stands are found. Here grasses, wildflowers, and ferns dominate with occasional open grown trees. The effect is distinctly pastoral.

The three major streams of the Allegheny National Forest are Tionesta Creek, the Clarion River, and the Allegheny River. These streams and their major tributaries occupy the valleys of greatest depth and enclosure. With the exception of the Clarion River, which flows in a meandering valley, the larger streams are sinuous in pattern. However, lesser streams of low gradient do meander. Cascades and small waterfalls occur solely on the lesser streams of high gradient.

Because this area is unglaciated, natural lakes and ponds are non-existent. However, several artificial water bodies have been created. The Allegheny and Tionesta Reservoirs experience substantial water level fluctuations. On the other hand, the smaller impoundments, created solely for recreational purposes, have constant levels, such as Chapman Lake, Beaver Meadows Lake, and Twin Lakes.

CULTURAL RESOURCES

Cultural resources are the physical remains left by people who occupied or visited areas during historic or prehistoric times. These remains provide valuable insights into the life styles of past inhabitants and travelers through the region which includes the Allegheny National Forest. A rich and varied cultural record has been left during the past 14,000 years of human use.

Most of the prehistoric remains occur in or near the Allegheny River valley. The first group of people to use this area were people of the Paleo-Indian culture. They followed a wandering way of life, hunting big game and

gathering plant foods. Remains of their lives and activities are found in rock shelters, camps, quarries, work areas, and kill areas. Later groups of prehistoric people developed farming and a settled way of life. Their remains are found in villages, forts, and mounds.

The first Europeans in this region were transient missionaries, explorers, soldiers, and traders. They were followed by settlers, farmers, and loggers. In the nineteenth century, settlement and exploitation of the region accelerated. Remains of railroad grades, lumber camps, sawmills, tanneries, oil wells, powerhouses, mines, and iron furnaces have been found, as well as homesteads, farms, schools, towns, and villages.

WATER QUALITY

The Allegheny National Forest is in a region of abundant water, with annual precipitation of around 42 inches and runoff of 21 inches. These figures translate to volumes of 850 billion gallons from precipitation and 425 billion gallons of runoff. The available water supply exceeds domestic, commercial, and industrial needs currently and into the foreseeable future.

Streams on the Allegheny Plateau have naturally low fertility and buffering capacity due to the bedrock of shale and sandstone. Despite the low natural productivity of the waters, streams on the Forest are an important fisheries resource, with many streams stocked with trout by the Pennsylvania Fish Commission for a "put and take" fishery. The low buffering capacity of the waters make them susceptible to large fluctuations in acid levels or pH. Low pH values usually occur during snowmelt, when a large volume of acidic runoff is delivered to the streams in a short period of time.

Although streams on the Forest generally have good water quality, some streams have degraded segments, primarily as a result of past and current oil and gas development. Pollutants generated by the oil industry include sediment, brine, and oil and gas. The Pennsylvania Department of Environmental Resources estimated in 1982 that 16 percent of the streams in the Upper Allegheny River Basin exhibit chronic or intermittent violations of state water quality standards, with the majority of violations due to oil operations and acid mine drainage. Other sources of pollutants to streams on the Forest are sedimentation from logging operations, road construction, and other earthmoving activities.

In recent years, several instances of contamination of drinking water wells by natural gas have occurred in the vicinity of the National Forest. These occurrences suggest that groundwater aquifers have been affected by oil and gas development. However, the extent and nature of groundwater contamination is not known. Currently, the U.S. Geological Survey is studying groundwater resources in Warren County. This study will provide better information on the quality of groundwater supplies in the vicinity of the National Forest.

Natural lakes and ponds do not occur on the unglaciated Allegheny National Forest. Several impoundments have been constructed, the most important of which is the Allegheny Reservoir formed in 1966 by construction of Kinzua Dam. This impoundment is 12,000 acres in size with 91 miles of shoreline in Pennsylvania and New York. The reservoir's primary functions are flood control and augmentation of low flows on the Allegheny River. See Riparian Areas (Page 3-17) for discussion on small impoundments.

NOISE

Noise on the Allegheny National Forest arises primarily from five sources: (1) vehicle use, (2) campground use, (3) road construction, (4) timber management, and (5) oil and gas development and production. Noise is usually localized, with the distance at which noises are audible being a function of the noise level of the emitting source, the topography, and the density of vegetation. Noises also vary in duration and time of occurrence. The most important characteristic of noise, however, is in the ear of the beholder: People vary in their perception and in their tolerance of noise.

Noise levels are currently objectionable in some situations. For example, people involved in non-motorized recreation, such as hiking or ski touring, often dislike hearing sounds of trail bikes or snowmobiles. A person fishing in a quiet bay on the Allegheny Reservoir may object to the noise of a passing speedboat. Noise from timber harvesting or oil well drilling may interfere with other recreation experiences.

Other noises, however, are pleasing and commonly found in a forest setting, such as birds singing or squirrels chattering. It is the quiet atmosphere in the surrounding Forest which allows these natural sounds to be heard.

ROADS

Origins of the Transportation System

The present transportation system on the Allegheny National Forest reflects the evolution of transportation in this area. The earliest means of travel were streams and rivers, which were used by the Indians, trappers, and early settlers. The first land-based transportation routes usually followed the already established and familiar water routes.

The oil boom that started in 1860 led to construction of railroads and roads to serve the oil fields. Another boom in the logging and tanning industries between 1890 and 1920 also resulted in the construction of railroads. Many of these lines were temporary and were moved to a new location once an area had been clearcut. In some instances, roads were the first transportation facility into the area. In other cases, roads developed on abandoned railroad grades. The jurisdiction of these roads is often dubious, due to their ambiguous origins and the early separation of surface and subsurface property rights in this region.

Through the 1950's and 1960's, the primary road systems were improved and extended in response to the demands of an increasingly mobile public. In the 1970's, concern over the environmental impact of roads and the desire to preserve the remaining unroaded areas reduced the growth of the Forest Service road system nation-wide.

Usage of the Transportation System

Today, recreation and wildlife-associated traffic put an estimated 1,500,000 vehicles on the local road systems annually. Driving for pleasure is the third largest recreation activity on the Allegheny NF, comprising 15 percent of the annual recreation visitor days. Automobiles are also used in conjunction with other recreational activities, including hunting, fishing, camping, hiking, and skiing. The demand for recreation in a roaded natural setting is expected to increase.

The transportation system on the Allegheny NF is also vital for producing natural resources, such as timber and oil and gas. Harvest of timber puts approximately 52,000 trucks and support vehicles on the forest road system annually.

Existing Transportation System

The transportation system within the Forest consists of the following:

State roads	545 miles
Township roads	213 miles
Forest Service roads	898 miles
Private roads	3400 miles (estimated)

Approximately 300 miles of Forest Service roads are currently closed by either gates or earthern barriers.

Principal access routes to the Forest are Highways 6, 59, 62, 66, and 219. There is a good distribution of primary travel routes running both north-south and east-west. Based on present use, the existing highway system adequately serves developed recreation sites on the Forest, but many highways are in need of upgrading.

Almost all of the state and township roads and half of the private roads were laid out prior to 1930. Many of these roads were not designed to accommodate the lengths, heights, and loading requirements of modern logging, freight, and oil field equipment.

Local townships and the Forest Service recognize that it is in the public interest for them to share in the cost of the construction, reconstruction, improvement, and maintenance of certain Forest development and township roads. This intent to cooperate is documented by formal agreements with 11 townships on 120 miles of township roads within the Allegheny National Forest

The Allegheny National Forest has an average of 6.3 miles of road per square mile of land. This figure includes roads under all jursidictions. The large amount of private roads, particularly roads built for mineral extraction, contributes significantly to this high road density. In areas of intense oil and gas development, geologic conditions dictate locating wells in a grid pattern with a spacing of 500 feet. The system of access roads in such areas can reach 12 miles of road per square mile of land. Road access to a particular area is often needed by both the Forest Service to manage timber and a mineral owner to produce oil and gas. In such cases, the Forest Service and the mineral operator work cooperatively to develop a road system that will meet both needs.

Standards for Forest Service Roads

Forest Service roads are designed and built for the protection, administration, and utilization of the National Forest, and the use and development of its resources. The intended use of the road, safety, cost of transportation, and impacts on land and resources are the factors that determine the design standards for the road. A road may be designed and managed in its entirety to the same set of standards or may have different standards for different sections, depending on the intended use for each section of road and the resource management objectives of the area served by the road.

The Forest Service recognizes two major categories of road standards: system roads and non-system, or temporary roads. A road is planned, developed, and managed as a system road when it is needed for long-term resource management. Temporary roads are used when a road is needed only for a limited time, usually for timber harvest. When the need for the temporary road is ended, the land occupied by the road is returned to resource production.

Design standards for system roads are based on design criteria. These criteria include resource management objectives, environmental constraints, safety requirements, physical environmental factors, traffic requirements, vehicle characteristics, and traffic service levels.

Traffic service levels describe the significant traffic characteristics and operating conditions for a road. Since publication of the draft Forest plan and Environmental Impact Statement, the Allegheny National Forest has implemented use of Traffic Service Levels (TSL's) as key criteria in determining road design standards. The four TSL's used - TSL A, TSL B, TSL C, and TSL D - are described in Table 3-2 at the end of this section.

Representative examples of system road standards typically associated with each of the TSL's are provided in the photographs, Figures 3-1 through 3-4.

Table 3-2 Road Operational Characteristics by Traffic Service Level

Operating Character.	Traffic Service Level A	B	C
FLOW	Free flowing with adequate passing facilities.	Congested during heavy traffic such as during peak logging or recreation activities.	Interrupted by limi ing facilities, or by the road conditi
VOLUMES	Uncontrolled: will accommodate the expected traffic volumes.	Occasionally controlled during heavy use periods.	Erratic: frequently trolled as the capa is reached.
VEHICLE TYPES	Mixed: includes the critical vehicle and all vehicles normally found on public roads.	Mixed: includes the critical vehicle and all vehicles normally found on public roads.	Controlled mix: acc all vehicle types i the critical vehicl use may be controll minimize conflicts vehicle types.
CRITICAL VEHICLE	Clearances are adequate to allow free travel. Overload permits are required.	Traffic controls needed where clearances are marginal. Overload permits are required.	Special provisions needed. Some vehic have difficulty neg some segments.
SAFETY	Safety features are a part of the design.	High priority in design. Some protection is accomplished by traffic management.	Most protection is by traffic manageme
TRAFFIC MANAGEMENT	Normally limited to regulatory, warning, and guide signs and permits.	Employed to reduce traffic volume and conflicts.	Traffic controls ar quently needed duri periods of high use dominant resource a
USER COSTS	Minimize: transportation efficiency is important.	Generally higher than TSL A because of slower speeds and increased delays.	Not important: effi of travel may be tr lower construction
ALIGNMENT	Design speed is the predominant factor within feasible topographic limitations.	Influenced more strongly by topography than by speed and efficiency.	Generally dictated graphic features an ronmental factors. speeds are generall
ROAD SURFACE	Stable and smooth with little or no dust, considering the normal season of use.	Stable for the predominant traffic for the normal use season. Periodic dust control for heavy use or environmental reasons. Smoothness is commensurate with the design speed.	May not be stable u traffic or weather tions during the no season. Surface ru roughness, and dust present, but contro environmental or im protection.

FIGURE 3–1
Typical Traffic Service Level A Road

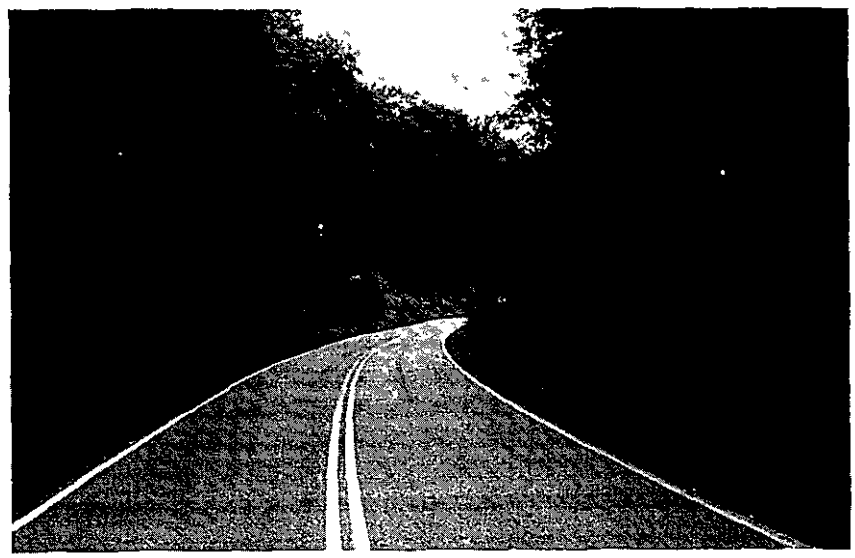


FIGURE 3–2
Typical Traffic Service Level B Road



FIGURE 3-3
Typical Traffic Service Level C Road



FIGURE 3-4
Typical Traffic Service Level D Road



Adoption of the Traffic Service Level concept has resulted in major changes in the transportation system, particularly with regard to temporary roads. These changes are incorporated in the final Forest Plan and Environmental Impact Statement, and are highlighted below:

1) Miles of temporary (non-system) roads needed for each alternative were not displayed in the draft EIS but are displayed in Chapter 4 of the final EIS.
2) Under the Traffic Service Level system, many road needs that were formerly met with temporary (non-system) roads will now be met with TSL D roads. Consequently, the miles of temporary roads have decreased and system road miles have increased between the draft EIS and the final EIS.
3) Estimates of road construction in the draft EIS were developed from average per acre road needs on a Forest-wide basis. Road estimates in the final EIS were adjusted based on the location of each management area and are, thus, more reflective of actual ground conditions.

The above three changes resulted in a significant increase in the total miles of roads displayed for the alternatives (see Tables 4-12 and 4-13, Chapter 4).

B. BIOLOGICAL ENVIRONMENT

RIPARIAN AREAS

Riparian areas on the Allegheny National Forest occur primarily along streams. On major waterways, such as the Allegheny River and Tionesta Creek, floodplain development is evident, with formation of alluvial islands and the presence of flood-tolerant tree species. On larger streams, riparian areas may be marked by poorly drained soils and distinctive vegetation, such as hemlock stands and sphagnum moss, or by savannah stands. On some perennial streams and many intermittent streams, no distinctive riparian vegetation exists.

Very few lakeside and swampy riparian areas occur on the Forest. Impoundments constructed in Buzzard Swamp, the Owls Nest Area, Meade Run, and the headwaters of Salmon Creek provide a limited amount of these types of riparian areas. Beaver dams throughout the Forest and potholes in Buzzard Swamp supplement that provided by the small impoundments. These riparian areas provide habitat for black ducks, mallards, beavers, minks, muskrats, raccoons, and a variety of other birds, mammals, reptiles, and amphibians.

Riparian areas provide important diversity not found elsewhere on the Forest. Distinctive vegetation and adjacent water provide unique wildlife habitat. The aesthetic quality of water combined with fishing or wildlife viewing affords special recreation opportunities. Maintenance of water quality is dependent on the sediment-trapping ability of the forest floor adjacent to streams, the shading ability of stream-side vegetation, and the input of nutrients from organic debris in streams.

VEGETATION

Vegetative Diversity

This section describes the past and present vegetative diversity of the Allegheny National Forest. Diversity is determined by the vegetation's age, species composition, structure, and spatial pattern. The discussion of historical diversity is based on The Allegheny Hardwood Forests of Pennsylvania by David Marquis, USDA Forest Service General Technical Bulletin Report NE-15, 1975.

Pre-settlement Era - Prior to 1800

The land was covered by a continuous forest canopy, with trees of the same species present today, but differing in their distribution and relative abundance. In the absence of logging, many of the stands had very large mature or even overmature trees. Growth and decay, insect and disease mortality, windthrow, and fire created openings in which seedlings and young trees could grow. Other tree species were able to germinate and grow underneath the dense canopy of older trees.

The most common species in the primeval forest were hemlock and beech. According to early land surveys, these two species comprised 58 percent of the trees. Beech and hemlock can reproduce under the shade of a full canopy and probably represent the climax type in this area. Sugar maple frequently occurred in beech/hemlock stands, in some cases replacing hemlock in importance. Other species occurring were red maple, yellow and black birch, white ash, and black cherry.

Stands of white pine occurred in limited areas, such as sandy river flats and terraces. Often originating after natural catastrophes such as drought followed by fire, these pine stands also contained American chestnut, red maple, and oaks.

Early Settlement Era - Prior to 1880

Early logging was limited in extent and in the species logged. Patches of pine and some hemlock along streams were harvested, as were scattered trees throughout the forest. Streams were the major means of transporting logs.

Clearcutting Era - 1890 to 1920

During this 30-year period, the original forest was almost entirely clearcut. Railroad logging equipment and rail transport allowed logging of even the most rugged and remote areas. The present vegetation on the Allegheny National Forest resulted from this era of exploitation.

Proclamation of the Forest - 1923

The area that was proclaimed as the Allegheny National Forest was known at the time as the great brush patch. The large beech, hemlock, white pine, and sugar maple of the old-growth forest had been replaced by young stands of seedlings and saplings. Black cherry and red maple were the dominant species in the new forest. The two purposes for which the National Forest was established were (1) to provide a stable supply of timber and (2) to manage and protect watersheds in order to stabilize water flows.

The Present Forest

The present vegetation on the Allegheny National Forest originated as a result of widespread clearcutting. Table 4-24 displays the present vegetative structure of the Allegheny National Forest. Hardwood sawtimber stands are often even-aged, although stands containing two or three ages are also common. Over 80 percent of these stands range in age from about 50 to 90 years. There are 142 species of plants known to occur on the Allegheny National Forest. A comprehensive list of the species is on file in the Forest Supervisor's office.

About 53 percent of the Forest is in the Allegheny Hardwood type, containing black cherry, red maple, yellow poplar, white ash, and sugar maple. Somewhat less than 16 percent of the Forest is in northern hardwood type, which is similar in species composition to Allegheny hardwoods, but with black cherry less abundant and sugar maple more abundant. The oak type, comprised primarily of white oak, red oak, chestnut oak, and other dense hardwoods, occurs on about 18 percent of the Forest. This type is frequently found on slopes and ridge tops along major stream valleys and may be the result of past fires.

Minor amounts of the Forest are in open savannahs or "orchard" stands, conifer plantations, and aspen stands. About four percent of the Forest is in savannahs or poorly stocked Allegheny hardwood stands. Scattered cherry trees occur, but goldenrod, aster, fern, and other herbaceous species dominate. Another four percent is in conifer monotypes of red pine, white spruce plantations, and a few natural white pine stands that became established as a result of the clearcut era. The plantations range in size from 10 to 50 acres and are scattered across the Forest.

Aspen is the dominant species on about two percent of the Forest. Occasionally it is found in pure aspen stands, but it more commonly occurs as the dominant species in mixed hardwood stands.

Deer browsing has decimated the natural understory of the forest. Distinct browse lines occur in most forest stands.

Current Timber Management

Since about 1960, approximately five percent of the Forest has been clearcut or shelterwood cut. The new timber stands that have resulted from this even-aged management are sometimes referred to as the "third forest" (the first forest being the original pre-settlement forest and the second forest being the current forest that resulted from the clearcut era). The third-forest stands, which range in size from 10 to 40 acres, increase horizontal diversity but tend to be less diverse in species composition. Black cherry is more abundant in third-forest stands than in the second forest. This trend may result from deer preferring to browse other tree species instead of cherry in the newly regenerated stands. Excessive deer browsing also causes the use of expensive mitigation measures to assure adequate regeneration of desirable tree species.

Between 1979 and 1983, the average actual harvest on the Allegheny National Forest has been about 25 million board feet of sawtimber and an equal volume of pulpwood. Sawtimber accounts for about 99 percent of the value of the harvest. In 1983, the sawtimber cut had an average value of over $200 per thousand board feet.

The Allegheny hardwood stands are, by far, the most valuable timber type on the Forest. The black cherry, white ash, and other shade-intolerant species contained in these stands usually drive the value obtained from regeneration harvests to over $2500 per acre. The oak type historically has produced moderate values. In the past couple of years, however, a strong demand for northern red oak has resulted in oak values that rival cherry. It is too early to tell whether this represents a long-term trend or just a brief surge in the red oak market. The Northern hardwood type has much less value per acre than the other two types, due to the low value of beech and hemlock and moderate to low sugar maple values.

The current demand for average to better quality hardwood sawtimber exceeds the non-declining sustained yield of the Forest. Currently, approximately half of the Forest's available pulpwood is marketed. The maximum non-declining sustained yield of the Forest is estimated to be about 136 million board feet of sawtimber and pulpwood each year (as calculated by the benchmark run titled "Maximize Timber Volume Production Over the Next 50 Years").

WILDLIFE

There are 312 species known to occur on the Allegheny National Forest. The total number of species by broad groups and the number of species hunted or trapped are the following:

	Number of Species	No. Hunted/ Trapped
Mammals	49	21
Birds	213 (126 breeding)	13
Reptiles	24	1
Amphibians	26	2
Total	312	37

A comprehensive list of species is on file in the Forest Supervisor's office.

The number of wildlife species that are found on the Forest and their population levels is a direct result of the amount, quality, and variety of animal habitats available. Many animal habitats are associated with vegetation diversity and readily available high quality water. Some of the components of vegetation diversity include permanent openings, timber types, timber age classes, species composition, and their spatial distribution.

Table 4-24 (Page 4-94) in Chapter 4 displays the present vegetative diversity on the Forest. Most of the acreage shown in the 1-30 age class is actually in the 1-9 age group. The latter group covers approximately two percent of the Forest. Although the table shows four percent of the Forest is covered by the conifer type, another large portion of the Forest has understory hemlock which provides additional habitat for species which use conifer-hardwood habitat. From two percent to 30 percent of a management area may now contain understory hemlock. Although there is some old growth hardwood acreage, the Forest contains very few old growth conifer stands except for the Tionesta Scenic Area,

the Tionesta Research Natural Area, and the Hearts Content Natural Area. The preceding section on vegetation provides additional information.

Twelve wildlife species have been selected as management indicator species to monitor trends in habitat capability for them and other associated species requiring similar habitat requirements.

Wildlife Management Indicator Species

Species	Habitat Indicator
White-tailed Deer	Regenerating Deciduous
American Woodcock	Permanent openings - Regenerating Deciduous
Magnolia Warbler	Regenerating Hemlock
Beaver	Regenerating Deciduous (aspen)
Black-throated Green Warbler	Mature mixed Hemlock - Deciduous
Hermit Thrush	Mature mixed Hemlock - Deciduous with dense understory
Barred Owl	Old growth mixed Hemlock - Deciduous
Great Blue Heron	Old growth mixed Hemlock - Deciduous
Ruffed Grouse	Regenerating Deciduous
Red-shouldered Hawk	Mature Deciduous
Yellow-bellied Sapsucker	Mature Deciduous
Pileated Woodpecker	Old growth deciduous
Rattlesnake	Regenerating deciduous

The process used to select management indicator species is described in the planning records.

The white-tailed deer, wild turkey, and black bear are currently the most important game species. These three species provide approximately 80 percent of the current hunting use. Other important game species include the raccoon, gray squirrel, ruffed grouse, woodcock, and snowshoe hare. Important furbearers include the red fox, gray fox, beaver, mink, and muskrat.

Estimated 1982 pre-hunting season populations and trends of the primary game species are as follows. Populations were estimated using Pennsylvania Game Commission and Forest Service data.

Species	Estimated Population	Current trend
White-tailed Deer	38,730	Decrease[1]
Wild Turkey	2,550	Slight increase
Black Bear	410	Increase

1 Planned reduction by Pennsylvania Game Commission to achieve their population objectives for Warren, Forest, McKean, and Elk Counties.

Very little quantitative information exists on populations of small-game and non-game species in the Allegheny National Forest.

FISH

There are 71 fish species in the streams and impoundments located throughout the Forest. The most important species sought by fishermen are the walleye, smallmouth bass, muskellunge, northern pike, yellow perch, channel catfish, brook trout, brown trout, rainbow trout, white and black crappies, largemouth bass, and bluegills.

The number of fish species and their population levels are related directly to the amount, quality, and variety of aquatic habitats. Water temperature and chemical characteristics, bottom type, stream gradient and flow, and cover are some of the important factors that determine the fish species and their population levels for each stream or impoundment.

The brook trout and walleye have been selected as a management indicator species to monitor trends in habitat capability for species associated with warm and cold water habitats.

The process used to select management indicator species is described in the planning records.

Fish Management Indicator Species

Species	Habitat Indicator
Brook Trout	Cold water habitat
Walleye	Warm water habitat

THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN

Endangered

The bald eagle is the only endangered species on the Federal list of endangered species that is known to occur on the Forest at the present time. Both adults and juveniles have been observed in recent years along the Allegheny River between Warren and the Kinzua Dam and along the shoreline of the Allegheny Reservoir.

Other Species of Special Concern

Thirty-four additional Species of Special Concern in Pennsylvania are known to occur on the Forest. This includes 8 mammals, 15 birds, 2 reptiles, 6 fishes, and 3 plants.

Only two of these species are listed by Pennsylvania as endangered or threatened. The osprey is classified by the State as endangered and is a migrant; however, a hacking project has been initiated on the Allegheny Reservoir in New York recently. The Henslow's Sparrow is classified as threatened by the State and occurs on private land within the proclamation boundary.

The other 32 species are listed as rare or species of concern and include the following: bobcat, river otter, snowshoe hare, least weasel, coyote, New England cottontail, Keen's little brown bat, silver-haired bat, great blue heron, Cooper's hawk, red-shouldered hawk, northern goshawk, sharp-shinned hawk, marsh wren, eastern bluebird, grasshopper sparrow, yellow-bellied sapsucker, least flycatcher, raven, bobolink, purple martin, rattlesnake, coal skink, gravel chub, bluebreast darter, spotted darter, channel darter, gilt darter, longhead darter, small-headed rush, broad-leaved water plantain, and puttyroot.

A five-year breeding bird study is being conducted in Pennsylvania now and will provide more specific information concerning the aforementioned bird species. Other existing and planned surveys will also provide additional information concerning the status of Species of Special Concern in Pennsylvania.

The National Forest Management Act requires that endangered and threatened species habitat be protected. Management standards and guidelines have been developed to insure that at least minimum viable populations of all animal and plant species will be provided in the planning area. They were

prepared in cooperation with the Pennsylvania Game Commission, Pennsylvania Fish Commission, Pennsylvania Department of Environmental Resources-Bureau of Forestry, and Western Pennsylvania Conservancy.

RECREATION OPPORTUNITIES

The Allegheny National Forest provides opportunities for many different recreational activities in a variety of forest settings. The settings and the recreational experiences available are described by the Recreational Opportunities Spectrum (ROS). ROS classes available on the Forest range from semi-primitive non-motorized to rural. See the glossary for complete definitions of ROS classes.

Recreation activities are usually classified as developed recreation and dispersed recreation. Developed recreation includes those activities available at recreation sites, such as campgrounds, picnic areas, and swimming beaches. Dispersed recreation occurs in the general forest environment and usually is not dependent on constructed facilities; examples are hiking, hunting, and fishing. Recreation activities on the Forest and the amount of use occurring in 1983 are shown in Table 3-3.

Developed Recreation

Developed recreation sites are located throughout the Forest, but the Allegheny Reservoir is the focal area for most of this type of recreation use. Of the 17 campgrounds on the Forest, 10 are located on the shores of the Reservoir. After completion of the Reservoir and shoreline recreation facilities in 1971, recreation use on the Forest nearly doubled, to about 2.2 million recreation visitor days (RVD's). The level of use has remained stable since 1972.

The summer recreation season for developed sites lasts from Memorial Day through Labor Day. During this period major recreation areas are fully staffed, lifeguards are on duty at the beaches, and water systems and flush sewage systems are functioning. Fees are collected at 11 campgrounds and four swimming areas.

Table 3-3 Recreation Activities and Amount of Use on the Allegheny National Forest[1]

Activity	Developed Use (M RVD)	Dispersed Use (M RVD)
Hunting	--	274
Camping	500	135
Driving for Pleasure	--	329
Fishing	34	132
Viewing Scenery	16	97
Hiking	3	87
Boating and Canoeing	35	86
Cabin Use	51	--
Trailbikes and Snowmobiles	--	34
Firewood Gathering	--	32
Picnicking	32	5
Swimming	26	7
Bicycling, Horseback Riding, Ski Touring	--	18
Interpretive Activities	12	16
Total	709	1,252

1 Use figures based on Forest Service estimates. Hunting and fishing estimates are somewhat higher than Pennsylvania Game or Fish Commission estimates. This is because the Forest Service estimates include some activity associated with the hunting or fishing experience but not directly related to the taking of game or fish.

Dispersed Recreation

Dispersed recreation on the Forest is primarily hunting, fishing, and driving for pleasure. Hunting, driving for pleasure, and, to a lesser extent, fishing are dependent on the many local roads, both private and public, on the Forest. Concentrations of use occur along the roadways and water courses, especially where they cross or come close together. The trail system provides access for other types of dispersed recreation. The 170 miles of constructed hiking trails include two National Recreation Trails and one National Scenic Trail. Sixty miles of off-road vehicle trails serve trailbike enthusiasts, while 328 miles of designated trails and roads serve snowmobilers.

Summer is the time for water-oriented activities which are concentrated along the three major water courses in the Forest: Allegheny Reservoir and River, Tionesta Reservoir and Creek, and the Clarion River. During the fall, hunting

is very popular, with hiking and sightseeing a close second, especially during the fall color period. In the winter, cold weather activities, such as snowmobiling, ski touring, and ice-fishing predominate. As the weather turns warmer in spring, emphasis returns to the water-oriented activities, such as fishing and canoeing.

WILDERNESS

On October 30, 1984, legislation was passed to establish the Hickory Creek and Allegheny Islands Wilderness areas. See Figure 3-5. Congress directed that evaluation of other areas for Wilderness is not necessary for the remainder of this planning cycle. For more background in Wilderness, see discussion under the Wilderness problem statement in Chapter 1 (Page 1-17).

SPECIAL RECREATION DESIGNATIONS

Allegheny National Recreation Area

The Allegheny National Recreation Area (NRA) was designated by the Pennsylvania Wilderness Act of 1984 to "ensure the preservation and protection of the area's natural, scenic, scientific, historic, archaeological, ecological, educational, watershed, and wildlife values and to provide for the enhancement of recreational opportunities, particularly undeveloped recreational opportunities, and ensure that any mineral exploration and development that takes place within the recreation area is done in an environmentally sound manner." The NRA is 23,100 acres on the northern portion of the Forest as shown in Figure 3-5.

The NRA is managed for the purposes of:

1. outdoor recreation including but not limited to, hunting, fishing, trapping, hiking, back-packing, camping, nature study, and the use of motorized and nonmotorized boats on the Allegheny Reservoir.

2. the conservation of fish and wildlife populations and habitat.

3. the protection of watersheds and the maintenance of free flowing streams and the quality of ground and surface waters in accordance with applicable law.

4. the conservation of scenic, cultural, and other natural values of the area.

5. allowing the development of privately owned oil, gas, and mineral resources subject to reasonable conditions prescribed by the Secretary for the protection of the area.

6. mimimizing to the extent practicable, the environmental disturbances caused by resource development, consistent with the exercise of private property rights.

Scenic Areas

The Allegheny National Forest has two scenic areas. The Tionesta Scenic Area was dedicated in 1940 and added to the National Register of Natural Landmarks in 1973. This area is 2,018 acres in size and features one of the oldest and largest tracts of virgin beech-hemlock climax forest in the eastern United States. About one-third of the timber was leveled by a severe tornado on May 31, 1985.

The Hearts Content Scenic Area was designated in 1969 and added to the National Register of Natural Landmarks in 1973. It is 122 acres in size and features a stand of virgin white pine, hemlock, and mixed hardwoods.

Both of the scenic areas are managed to:

1. protect the unique areas of national significance and provides dispersed recreation opportunities that emphasize the area's uniqueness.

2. preserve the unique ecosystems for scientific purposes.

Federal Wild and Scenic Rivers

The Wild and Scenic Rivers Act of October 2, 1968, (P.L. 90-542), directed a study of the Clarion River to determine its eligibility for inclusion in the National Wild and Scenic Rivers System. The Bureau of Outdoor Recreation submitted a report to Congress on February 22, 1974, stating the Clarion River was ineligible. The primary reason was the significant effect of water pollution on the river environment.

In 1978, an amendment to the original Act (PL 95-625) identified the Allegheny River from Kinzua Dam to East Brady as a study river. The Forest Service is currently studying the river for possible inclusion in the National Wild and Scenic River System. The environmental impact statement

summarizing the study will soon be available. All forest plan alternatives considered in detail protect resource values along the river so that its eligibility is not precluded.

A Nationwide Rivers Inventory completed in January of 1981 by the Heritage Conservation and Recreation Service (HCRS) identified Kinzua Creek as meeting the minimum criteria for further study for potential inclusion. It is important to note that the Nationwide Rivers Inventory is a preliminary survey of rivers and should not be confused with the more detailed Congressionally mandated studies. Further study on the Kinzua Creek has been deferred until public demand or public law indicates a need for one. In the meantime, the standards and guidelines for each alternative considered in detail will protect the values that make the river eligible.

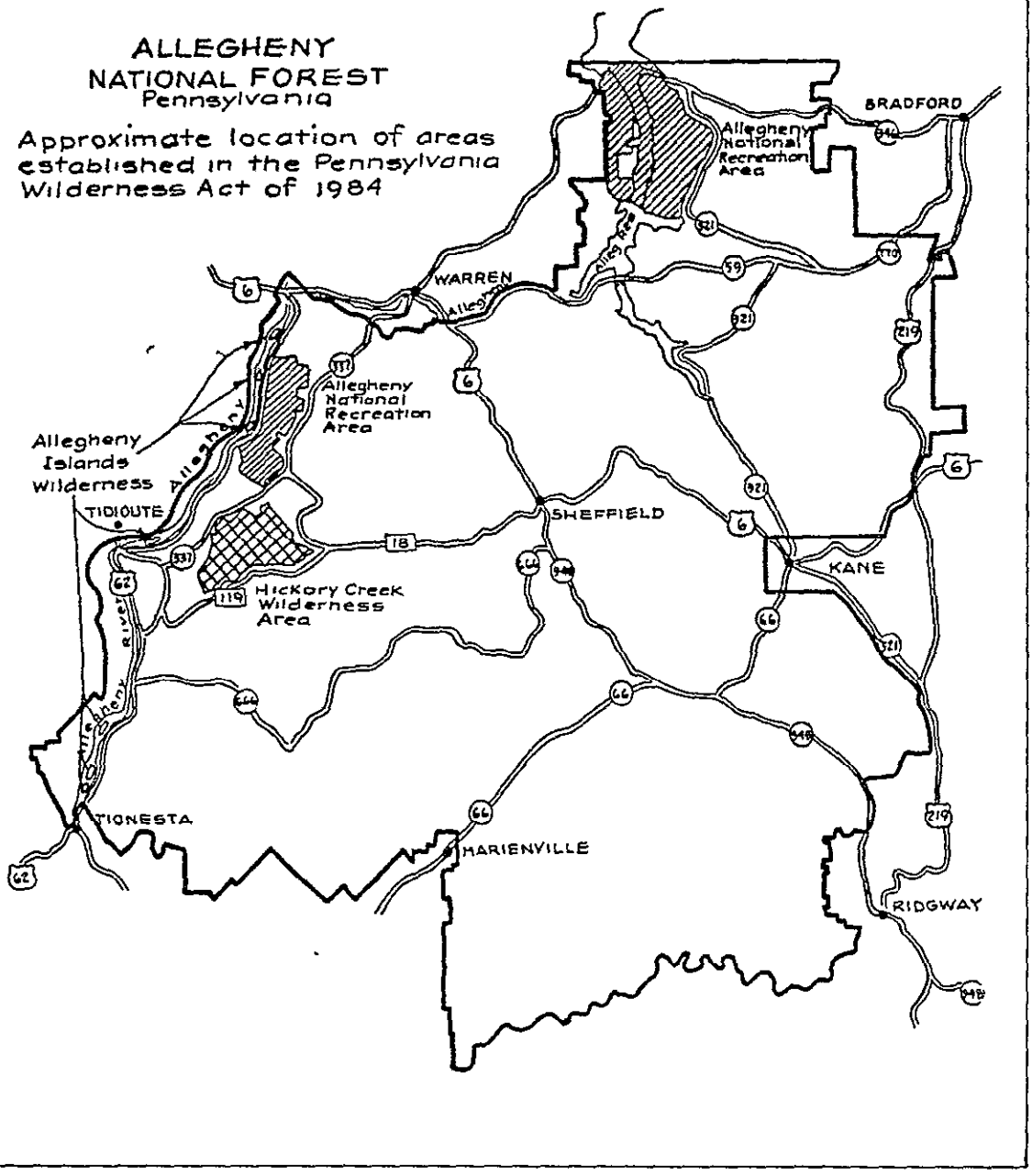
The Clarion River was also placed on the Nationwide Rivers list. Even though this river was studied and determined ineligible in 1975, it was placed on this list in the event the water quality problem improves. Further study on the Clarion was also deferred until such time that the water quality problem is resolved and public demand indicates a need for one. The standards and guidelines for each alternative considered in detail will protect the values that may make the river eligible.

State Scenic Rivers

The Pennsylvania Scenic Rivers Act, P.L. 1277, Act No. 283 as amended by Act 110, May 7, 1982, states that "many of the rivers in Pennsylvania, or sections thereof and related adjacent land areas, possess outstanding aesthetic and recreational values of present and potential benefit to the citizens of Pennsylvania". A state-wide rivers inventory completed in 1975 lists the following top priority waterways for potential State Scenic River designation:

Kinzua Creek	34 miles
Clarion Creek	87 miles
Bear Creek	12 miles
Tionesta Creek	52 miles
East Branch	10 miles
TOTAL	195 miles

FIGURE 3-5
Location of Wilderness and National Recreation Areas



EXPERIMENTAL FOREST AND RESEARCH NATURAL AREAS

The Kane Experimental Forest encompasses 1,650 acres and is administered by the Northeast Forest Experiment Station as a test research area.

The Tionesta Research Natural Area was jointly dedicated with the Tionesta Scenic Area in 1940 and added to the National Register of Natural Landmarks in 1973. These tracts of 2,113 and 2,018 acres, respectively, are located adjacent to one another. They feature one of the oldest and largest tracts of virgin beech-hemlock climax forest in the eastern United States. The Research Natural Area is administered by the Northeast Forest Experiment Station and managed for scientific study. See Special Recreation Designations (Page 3-28) for discussion of the Tionesta Scenic Area.

In addition to the above, four other areas are presently being considered for classification as research natural areas. They are:

1. Muzette Tract - This 20-acre area is located on the Marienville Ranger District and features a virgin white pine-hemlock stand (SAF Type 22). This tract was originally evaluated for Research Natural Area classification in 1978 and rejected due to its small size, outstanding oil and gas ownership, and the abundance of similar stands located in the Lake States. We are now resubmitting it for review.
2. Crulls Island - This 96-acre island in the Allegheny River features several stands of virgin riverine forest (SAF Types 61 and 62). The area was previously evaluated for Research Natural Area status in the 1970's but rejected because of its small size and inherent management problems. We are now resubmitting it in response to public concerns for preservation of the island's unique ecosystem.
3. Thompson Island - This 67-acre island features the same ecosystem discussed under Crull Island.
4. Sheffield Compartment 126 - This area, located in the Hickory Creek Wilderness, features black cherry (SAF Type 28). It consists of 11 stands (276 acres) of well-stocked timber. These stands range in age from about 55 to 75 years.

Both Crulls Island and Thompson Island are currently part of the Allegheny Island Wilderness Area. Future evaluations must address the compatibility of jointly designating each as "Wilderness" and "Research Natural Area."

C. SOCIAL AND ECONOMIC ENVIRONMENT

PLANS AND PROGRAMS OF OTHER AGENCIES

During the early stages of planning on the Allegheny National Forest, we contacted numerous federal, state, and local agencies, asking them to participate in our planning process. Appendix C of the FEIS lists the agencies which we contacted and briefly summarizes the results. Some of the agencies have plans or programs for the same resources addressed in the Allegheny National Forest Plan. We have concluded they present no significant conflicts with any of the alternatives presented herein, nor are there any significant duplications of management effort.

The following agencies perform a variety of tasks under their jurisdiction within the Allegheny National Forest:

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Pennsylvania Department of Environmental Resources
Pennsylvania Fish and Game Commissions
Pennsylvania State Police
Local Law Enforcement Officials

These and other agencies are responsible for enforcement of a variety of laws including federal and state environmental protection laws, oil and gas drilling regulations, abatement of public disturbances and nuisances, etc. Several also conduct technical investigations, monitoring programs, road maintenance, and other vital services.

The four counties encompassing the Allegheny National Forest receive payments from the federal government to offset the absence of tax revenues from federally owned land within the counties. The amount of the payments to the county governments is based on the amount of National Forest land within each county and the receipts generated from federal management of the land. Receipts are generated from timber sales, recreation site fees, special use permit fees, and royalties from leasing federally owned minerals. In fiscal year 1983, the total payment to the four counties was $1.6 million dollars.

PRIVATE PROPERTY RIGHTS

Property ownership on the Allegheny National Forest is split between the surface and the subsurface. Much of the land is divided vertically as well as horizontally, so that the title to the surface belongs to the Federal government

and title to the layers below the surface belong to one or several private parties. This severance of surface and subsurface ownerships began with the discovery and development of valuable oil and gas deposits in the nineteenth century.

Subsurface Estate

Under Pennsylvania law, which governs ownership on the Allegheny NF, the owner of the oil, gas, and mineral (OGM) rights has an easement to use the surface insofar as it is necessary for the recovery of the mineral resource. Both owners must exercise due regard for the rights of the other. While the OGM owner has the unquestioned right to enter upon the property for the purpose of exploring and recovering oil and gas, he/she must exercise such rights with a recognition of surface rights and take appropriate actions to prevent unnecessary disturbance to the surface owners.

When the federal government began acquiring land for the National Forest in 1923, generally only the surface rights were purchased. On some property, the surface and subsurface rights had been separated years earlier, with each being sold and bought by various people. When the federal government acquired the surface, therefore, the mineral rights were outstanding, which means owned by a third party. In other acquisition cases, one party owned both the surface and subsurface rights. When the federal government bought the surface rights, the seller reserved the mineral rights.

Table 3-4 displays the distribution of subsurface ownership under the half million acres of federal surface.

Table 3-4 Subsurface Ownership under Federal Surface on the Allegheny National Forest as of 10/31/85

Ownership Type	Acres	% of Total
Private, Mineral Rights Outstanding	236,714[1]	46
Private, Mineral Rights Reserved	244,160[1]	48
Federal Mineral Rights	29,658[2]	6
TOTAL	510,532	100

1 These figures are approximate.
2 Includes partial ownership on 5,879 acres

Outstanding and Reserved Rights

With outstanding OGM rights, the surface owner, in this case the Federal government, must receive at least 60 days advanced written notice of the subsurface owner's intentions to drill on National Forest lands. This notification must include the following:

1. Proof of ownership.
2. Designation of a field representative acting for the subsurface owner.
3. A plan of operation, including drilling and construction schedules.
4. A map showing the locations and dimensions of all improvements.
5. A Soil Erosion and Sedimentation Control Plan.

These items and the advance notice give the Forest Service the opportunity to work with the oil and gas operator in developing mitigation measures to protect the surface resources during energy mineral development.

When mineral rights were reserved during the acquisition of the surface estate, the Secretary of Agriculture attached a list of Rules and Regulations to the deed. These rules and regulations outline the mineral owner's rights and responsibilities for the surface resources during exploration and development of the mineral estate. These rules and regulations were included in the deeds in order to insure protection of the surface resources of the National Forest lands during mineral development.

The wording of the Rules and Regulations changed over the years, resulting in four separate versions occurring in 1911, 1937, 1947, and 1963. The Rules and Regulations form the legal basis for Forest Service administration of private mineral development. The following excerpts provide an overview of the items addressed in these four versions:

2. In carrying on mining operations and in searching for minerals only so much of the surface shall be occupied or disturbed as is reasonably necessary for the purpose. (1911's, 10 paragraphs)

4. All miners or mining operators shall make provisions to the satisfaction of the Forest Officer in charge for preventing the obstruction, pollution, or deterioration of streams, lakes, ponds, or springs, by tailings, dumpage, or otherwise, or the escape of any harmful or deleterious material or substance from their mines or work. (1911's, 10 paragraphs)

6. No timber shall be cut or used for or in connection with any mining use or purposes except with the permission of the proper Forest Officer first obtained and upon payment therefore at the price or prices fixed, as provided for in paragraph 5. (1911's, 11 paragraphs)

5. Nothing herein contained shall be construed to exempt the operator or the mining operations from any requirements of the laws of the State in which situated; nor from compliance with or conformity to any requirements of any law or regulation which later may be enacted or promulgated, and which otherwise would be applicable. (1937's)

5b. None of the lands in which minerals are reserved shall be so used, occupied, or disturbed as to preclude their full use for national forest purposes until the record owner of the reserved rights or the successors, assigns, or lessees thereof, shall have applied for and received from the Forest Supervisor having jurisdiction a permit authorizing such use, occupancy, or disturbance of specifically described parts of the lands as may reasonably be necessary to exercise of the reserved rights. Said permit shall be issued by the Forest Supervisor upon agreement as to the lands to be covered thereby and conditions necessary to protect National Forest interests. . .

7. While any activities and/or operations incident to the exercise of the reserved rights are in progress, the operators, contractors, subcontractors, and any employee thereof shall use due diligence in the prevention and suppression of fires, and shall comply with all rules and regulations applicable to the land. (1963's)

Surface Estate

Surface ownership within the proclamation boundary of the Allegheny National Forest is shown below:

Table 3-5 Surface ownership on the Allegheny National Forest

Owner		% of Total
Federal government	510,530	69
Other public owners	23,794	3
Private	208,369	28
TOTAL	742,693	100

CURRENT SOCIAL SITUATION

Area of Influence

The primary zone of influence of the Allegheny National Forest is the northern Pennsylvania counties of Warren, McKean, Forest, and Elk. Some local influence also extends into various adjacent counties of Pennsylvania and into Chautauqua, Cattaraugus, and Allegany Counties of New York. These influences are due primarily to commerce (particularly timber, minerals, and construction), recreation, and relationships with the Seneca Nation of Indians, Allegany State Park in New York, and Cooks Forest State Park in Clarion County, Pennsylvania. Regional influence extends to the Pittsburgh area and to the Youngstown-Cleveland vicinity in Ohio.

Population

Population of the four-county area has been gradually declining since 1960, showing a decrease of 88 people in 1960-1970 and 799 people in 1970-1980. However, two counties (Elk and Forest) showed population increases from 1970-1980. The 1980 population of the four counties was 1.2 percent of the State of Pennsylvania. Population trends have historically followed economic trends, particularly the changes in the timber and oil industries.

Primary population centers are Warren, Bradford, Kane, St. Marys, Johnsonburg, and Ridgway. Smaller communities of various sizes are present, along with isolated homesteads and clusters.

Seneca Nation of Indians

The interest of the Seneca Nation of Indians in the Allegheny River and surrounding lands stems from their long history of use in the area. In the seventeenth century, the Seneca held sway to these lands. They had waged a frightful series of wars with other Indian groups to obtain this control.

In the eighteenth century, the Seneca claim of control was shown in their giving permission for some displaced Indian groups to settle along designated sections of the Allegheny River below present day Warren, Pennsylvania. Probably the most famous of these refugee groups were the Munsee Indians whose settlements were visited by Zeisberger, the Moravian missionary.

The Iroquois were involved in the American War for Independence, with the Seneca fighting on the British side. A small skirmish was fought near Buckaloons in 1779 between members of Broadhead's expedition and a band of Indians, most likely Senecas. As a result of the depradations on their lands during the Revolutionary War and some consequences of the peace settlement, many Senecas moved west, settling along the Allegheny River in towns from Olean to Warren.

One of the places where settlement occurred was a tract of land known as the Cornplanter Grant. This was a plot of about 600 acres along the Allegheny River north of Warren. It had been given to Chief Cornplanter and his heirs for his good work in trying to keep the peace. Chief Cornplanter, who worked hard to see his nation survive, is perhaps the best known Seneca. Cornplanter's half brother was the prophet Handsome Lake, who apparently had his visions while on the Grant lands. The Cornplanter Grant land is of particular interest to the Seneca.

Senecas were in demand to ride log rafts that took wood from this area to Pittsburgh. Cornplanter apparently ran his own sawmill. Relations with other residents in the area were cordial. The Seneca population on the Grant steadily declined over the years. When the Kinzua Dam was completed, about a dozen people had to be moved. The memories of recent years are rather bitter for the Seneca. The flooding of the reservoir took a good portion of their land. They recall with deep regret what they consider the shameful handling of the removal of the Cornplanter Cemetery.

They do not, however, have any specific claims to lands of the Allegheny National Forest. The Grant lands were held in fee simple by the heirs of Cornplanter and were purchased at the time the dam was built, with the exception of a few small parcels. But these would only be of interest to individuals.

In summary, the current interest of the Seneca in the lands of the Allegheny NF is general and historic in nature. This interest was shown in 1983 when human skeletal remains were recovered from the shore of Willow Bay. Since the possibility existed the remains could be of Indian origin, the Seneca Nation of Indians was contacted. The Nation requested that if the material was determined to be of Indian origin, it be transferred to them. The Seneca take pride in their heritage, including its material remains. They would be interested in any activity likely to disturb those remains.

CURRENT ECONOMIC SITUATION

The average per capita income in the four-county area was $6,202 in 1980. The median family income was $17,909. In 1980, unemployment averaged 7.2 percent, ranging from 5.8 percent in Warren County to 9.1 percent in Forest County.

Several groups of local people are affected by management activities on the Forest, including timber operators, oil and gas developers, construction contractors, and recreation providers and participants.

Timber operators are affected economically by National Forest management. Of those involved in timber operations on the Forest, the majority come from Pennsylvania, particularly the four-county area, but several are based in New York. Few depend solely on National Forest timber, as most operators also cut on private and state lands. In the four-county area in 1977, four percent of the workforce was employed in the forest products industry.

Oil and gas developers may be large companies, independent operators, and various subcontractors and field workers engaged in drilling, construction, well completion, and well tending. The operators, contractors, and suppliers are generally not totally dependent on operations within the National Forest as many also work in other nearby areas of New York and Pennsylvania.

Both the timber and oil industries enjoy a strong local and regional tradition and acceptance. The present and past generations of a family are frequently employed in one or the other industries, with younger family members receiving training, experience, and, eventually, their livelihood in the traditional family occupation.

Construction contractors are an important economic group, particularly as support in timber, oil and gas operations, recreation construction, and other public and private endeavors.

Recreation is a major activity throughout the four-county area. Local people are involved as participants, particularly in hunting, fishing, and camping at developed sites, and as suppliers of recreational opportunities through campground management, small businesses, marina operations, etc. This activity is concentrated in the Allegheny Reservoir and River area, Clarion River, Cooks Forest, Tionesta, and various parts of Elk County, but also occurs throughout the Forest. In 1977, four percent of the work force was engaged in recreation-related employment.

On a regional basis, the Forest is heavily used by recreationists from Pittsburgh and Erie, Pennsylvania, and from the Cleveland, Youngstown, and Warren areas in Ohio. These people are involved in activities, such as camping, hiking, boating, fishing, hunting, and snowmobiling. Many regional residents also own or use seasonal homes and camps. Some regional people are interested in the designation of wilderness areas on the National Forest and in the management and protection of specially designated areas, such as Tionesta Scenic and Natural Areas, Hearts Content National Natural Landmark, and the North Country Trail.

CHAPTER 4

Environmental Consequences

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

This Chapter presents the environmental consequences or effects if either the preferred alternative or another alternative were implemented. The consequences include outputs and inputs, as well as both positive and negative environmental effects. Information in the Chapter is pertinent to the net public benefit equation:

Outputs and positive effects (benefits)	-	Inputs and negative effects (costs)	=	Net Public Benefits

Using information from this Chapter, readers should be better able to decide which alternative, including the preferred, provides the maximum net public benefits from the Allegheny National Forest.

The Chapter contains the following sections:

A. Causes of Environmental Effects (page 4-3)

   This section lists management practices that affect forest land and resources.

B. Affected Elements of the Environment (page 4-5)

   This section describes how the Interdisciplinary Team decided which elements of the environment would be significantly affected.

C. Environmental Effects of Practices (page 4-8)

   This section links each management practice with the effects of that practice.

D. Cumulative Effects of Alternatives (page 4-61)

   This section describes the cumulative effects on each environmental element (for instance, wildlife) of all management practices within a single alternative.

E. Mitigation Common to All Alternatives (page 4-123)

This section describes mitigated effects of management practices and identifies the appropriate mitigation measures for each practice.

F. Unavoidable Adverse Effects (4-145)

G. Relationship Between Short-term Uses and Long-term Productivity (4-146)

H. Irretrievable or Irreversible Commitments of Resources (4-150)

Information elsewhere in this EIS would aid readers in understanding the consequences presented in this chapter.

Kinds of Costs and Benefits	EIS App. B - pages 222-250, 274-280,283-360 Chapter 2 - pages 2-9, 49-82
Alternative Description	2-24 to 2-45 and B-174 to B-218
Management Area Locations	Enclosed maps by alternative
Present Environmental Conditions	Chapter 3
Management Prescriptions and Management Areas	Forest Plan - Chapter 4, EIS 2-46, & B-39 to B-68

This chapter of the Final EIS reflects numerous modifications made following the public review period for the DEIS. We have expanded it to include the following: 1) a more thorough description of the environmental and cumulative effects of implementing each alternative, 2) a section which describes the effects which are mitigated as well as the mitigation measures themselves, 3) a more thorough description of the effects of the high oil/gas development scenario on the preferred alternative, 4) estimated effects of the high oil/gas development scenario on the rest of the alternatives, and 5) a more thorough discussion of the relationship between short-term uses and long-term productivity.

A. CAUSES OF ENVIRONMENTAL EFFECTS

Environmental effects are caused by management practices. A management practice is a set of activities that alters the character of the landscape and affects the forest environment. Management practices are used to respond to the management problems identified in Chapter 1.

The environmental effects of an alternative result from applying various management practices to management areas in order to provide public benefits. The effects of the practices can be either quantitative or qualitative. Quantitative effects might be measured in acres or miles of roads, while qualitative effects are subjective. Many qualitative effects, such as changes in visual quality or noise, are non-priced outputs, which can only be monitored through public opinion, not by dollars. Thus, the positive and negative effects of noise or of changes in visual quality can only be valued by the importance the reader attaches to them.

Some management practices will not have significant effects on the environment. For example, significant effects result from road construction; later maintenance is insignificant. The reader can compare the practices discussed in this section against those listed in the management prescriptions (Chapter 4 of the Forest Plan) and identify a complete list of practices that are not significant in terms of the environment at this level of planning. Some of these practices may be significant at the project planning level, but they are not relevant to the Forest Plan decision.

The practices listed in Table 4-1 were identified by the Interdisciplinary Team as potentially causing significant environmental effects. An individual practice may respond to several problems, but each practice is discussed only once. The chart indicates the problem statement which includes the principal use of a practice. Other uses of a practice in response to other problem statements are also indicated in the chart. For example, road construction and management is needed to provide access to campgrounds (Problem 1) and for timber management (Problem 3). To avoid redundancy, the environmental effects of roads are discussed only under the problem statement generating the greatest amount of road work, Timber Management.

Table 4-1 Relationship of Practices to Problem Statements

Practices	Problem Statements: Developed Recreation	Dispersed Recreation	Timber Management	Wildlife Management	Private Oil/Gas Development	Wilderness
Developed Recreation Sites	A					
Dispersed Recreation		A	B			B
Even-aged Silviculture			A	B		
Uneven-aged Silviculture; Thinning			A	B		
Roads	B	B	A	B		
Herbicide Treatment			A	B		
Fertilization and Fencing			A	B		
Non-structural habitat improvement		B		A		
Structural wildlife habitat imp.		B		A		
Structural fish habitat imp.		B		A		
Energy Mineral Development					A	
Mineral Materials Development			B		A	
Wilderness Management		B				A

Coding:

A: Physical and biological effects of this practice are discussed under this problem.

B: Effects of this practice are referenced under this problem. Primary discussion of effects is under (A).

Management practices are described in detail under Chapter 4, Section C: ENVIRONMENTAL EFFECTS OF PRACTICES (Page 4-8 to Page 4-60).

B. AFFECTED ELEMENTS OF THE ENVIRONMENT

Interdisciplinary review of the issues, concerns, problem statements, and existing environmental conditions was used to identify which elements of the environment would be affected by the practices listed above in Table 4-1. The existing condition of these elements is described in Chapter 3. The Interdisciplinary Team further evaluated whether effects of a practice on an environmental element would be (1) significant, (2) mitigated by standards and guidelines such that any effects are insignificant, or (3) insignificant or non-existent. Whether a practice is significant or mitigated may vary in different alternatives, depending on the amount of the practice used in a particular alternative. If a practice is significant in one or more alternatives, it is shown as significant in Table 4-2.

Table 4-2 summarizes the results of this analysis. The table lists the management practices under the relevant problem statements. The environmental elements affected by these practices are shown across the top of the table. Within the table, the level of effect is indicated by the following:

Symbol	Level of Effect
S	When applied to National Forest land, this practice has the potential to cause significant change in the quality or quantity of this element. The change could occur directly or indirectly, and be positive or negative.
M	Forest Plan standards and guidelines mitigate effects of this practice.
BLANK	This practice has insignificant or non-existent effects.

Table 4-2 Effects of Management Practices on Environmental Elements

Management Problem and Practices	Soil and Landform	Energy Minerals	Mineral Materials	Other Mineral Resources	Visual Resources	Cultural Resources	Water Quality	Noise	Roads	Riparian Areas	Vegetation	Wildlife	Fish	T, E, Species of Concern	Recreation Opportunities	Wilderness	Special Rec Designations	Exp Forest/Research Nat Areas	Plan/Program - Other Agencies	Private Property Rights	Social, Economic Conditions
1. DEVELOPED RECREATION																					
Developed Recreation Sites	M			M	M	M	S	M	M			M	M	S		M		S	M	*	
2. DISPERSED RECREATION																					
Dispersed Recreation Mgt.	M			M	M	M	S	M	M		M	M	M	S			M	M	M	*	
3. TIMBER MANAGEMENT																					
Even-aged Silviculture	S			S	M	S	S	S	M	S	S	M	M	S		M		S	M	*	
Uneven-aged Silviculture																					
Even-aged Thinning	S			M	M	S	S	S	M	S	S	M	M			M		S	M		
Roads	S	S	S	S	M	S	S	S	M		S	M	M	S		M					
Herbicide Treatment	M			S	M	M			M	S	M	M	M								
Fertilization and Fencing					M	M			M	S			M								
4. WILDLIFE HABITAT																					
Non-Structural Hab. Imp.	M			S	M				S	S	S	S	M	S				M		*	
Structural Wildlife Hab. Imp.	M			M	M				S		S		M	S				M			
Structural Fish Hab. Imp.					M				S			S	M	S				M			
5. PRIVATE OIL/GAS DEVELOPMENT																					
Energy Mineral Developments	S	S	S	S	M	S	S	S	S	S	S	S	S	S	S	M	M	S	S	S	*
Mineral Materials Development	S	S	S	M	M		S	S					M	S		M			S		
6. WILDERNESS																					
Wilderness Management		S	S	S		S			M	S	S		M	S	M			S	M	*	

*Social and Economic Effects are discussed in Section D, Cumulative Effects.

Significant effects identified in Table 4-2 are discussed in Sections C and D of this Chapter. Section C shows how individual practices affect each environmental element. The cumulative change to the existing condition of an environmental element from applying all significant practices is discussed in Section D of this Chapter. For example, in Section C, the reader can see how the practice of clearcutting affects visual quality. In Section D, the reader can see how the visual resource will change from its existing condition due to the application of all the significant practices called for in each of the alternatives.

In Section E, the reader will find discussions of effects that are mitigated, as well as a summary of mitigation measures from Chapter 4 of the Forest Plan. Finally, Section F identifies adverse effects that cannot be completely mitigated.

C. ENVIRONMENTAL EFFECTS OF PRACTICES

This discussion of environmental effects is organized by management problem, and then by the practices linked to that problem. The reader can thus see the effects of a particular management problem. Under each problem will be found: (1) a description of management practices, (2) the amount of each practice for each alternative, and (3) a qualitative discussion of the significant environmental effects. Note that the variation of Alternative D displaying the effects of the high demand scenario for oil and gas development is shown as (D2) in the tables. The tables also provide the level of each management practice occurring on the National Forest in the recent past. This level, called Present Condition, is displayed as a decade average for easy comparison with decade totals projected for the alternatives.

The tables display activity and output amounts for the first five decades. The amounts shown for Decade 1 represent those actually planned for implementation. The amounts shown for Decades 2-5 are merely projections of activities and outputs for each alternative, assuming the same objectives are retained when the Plan is revised in 10-15 years and for revisions thereafter. The display of five decades shows the cumulative implications of the activities implemented to achieve the long-term objectives for each alternative.

PROBLEM 1: PROVIDING DEVELOPED RECREATION

The construction, operation, and maintenance of developed recreation facilities is the principal response to this problem statement. Alternatives vary by the type, amount, and location of new facilities, but most facilities enhance recreation opportunities along major river corridors and reservoirs. Table 4-3 displays the facilities planned in each alternative.

Table 4-3 Developed Recreation Facilities by Alternative[1]

Proposed Activity	ROS Class	"M" PAOTs by Alternative A	B	C	D	(D2)	E
Expand Existing							
1 Dewdrop	R			2.0	2.0	(2.0)	
2 Webbs Ferry	R			2.0P			2.0P
3 Willow Bay	R			1.5P	.5	(.5)	.5
4 KPIC	R			0	0	(0)	
5*Sugar Bay Boat Launch[2]	RN		.7				
6*Minister Creek	RN	.6					
New Facility Construction							
7*Allegheny River Area	RN	.3			.3	(.3)	.3
8*Bear Creek Area	RN	.3			.3	(.3)	
9*Salmon Creek Area	RN	.3					.3
10*S. Br. Tionesta Area	RN	.3					.3
11*Kinzua Ridge Area	RN	.3			.3	(.3)	.3
12*Blue Jay Area	RN	.3					
13*Buzzard Swamp Area	RN	.3					
14*Francis Estate (Clarion River)	RN			1.1	1.1	(1.1)	1.1
15*Arroyo (Clarion River)	RN	1.1					1.1
16*Clark Run (Allegheny River)	RN			1.1	1.1	(1.1)	
17 Arroyo Boat Launch (Clarion River)[2]	RN			.2	.2	(.2)	
18 Barnes Boat Launch (Tionesta Creek)[2]	RN	.2		.2	.2	(.2)	.2
19 Marienville VIS	R						.3
20 Glasner Run (Tionesta Reservoir)	R			1.3P			
21 Hopkins (Allegheny River)	R			1.6P	1.6P	(1.6)P	1.6P
22 Motel/Restaurant Complex (Allegheny Reservoir)	R				.3P	(.3)P	
New Resort Construction							
23 Kiasutha	R			5.0P			
24 Hodge Run	R						5.0P
25 Sugar Bay	R			5.0P			
Maintain Existing Facilities	-	18.8	18.8	18.8	18.8	(18.8)	18.8
TOTAL PAOTs		22.8	19.5	39.8	26.7	(26.7)	31.5

*Indicates small-scale facilities, remainder are considered large-scale. See text for definitions.

R = Rural
RN = Roaded Natural

P = Constructed by private investment.
PAOT = People At One Time, a measure of the facility's total capacity.

1 See Management Area Maps for location of each facility. Facility numbers above are indicated on the map symbols.
2 These include only a boat launch with no additional facilities. Three additional boat launches built as a part of a larger facility are not listed separately on this chart.

Management Practice: Developed Recreation Sites

Developed recreation facilities provide opportunities for camping, swimming, boat launching, picnicking, and other activities. These facilities frequently serve as overnight accommodations for people pursuing dispersed outdoor activities, such as fishing, hunting, hiking, or riding off-road vehicles (ORV). Four developed facilities may be constructed under this practice: (1) the expansion of existing facilities, (2) small-scale facilities, (3) large-scale facilities, and (4) resort facilities.

Existing facilities are expanded to offer additional recreation opportunities or to upgrade support facilities, such as water and sewage systems.

Small-scale campgrounds or complexes usually consist of fewer than 50 campsites. They provide support facilities for dispersed activities, such as hunting, hiking, and fishing. The campgrounds are primitive, with unpaved spur roads and no hot showers or flush toilets.

Large-scale campgrounds or complexes of more than 50 campsites provide recreation along major rivers and reservoirs. Facilities may include swimming beaches, boat launches, picnic areas, and amphitheaters. The campgrounds are built with paved roads and parking lots, hot showers, and flush toilets. Private corporations may construct and/or operate these campgrounds.

Resorts would provide recreation and support facilities on the Allegheny Reservoir. The resorts might include marinas, lodges, restaurants, motel complexes, cabins, ski slopes, conference facilities, riding stables, trails, swimming, picnic areas, and campgrounds. Resorts would be constructed and operated by private corporations under permit to the Forest Service. The visual impact of such resorts would be mitigated by vegetative screening and by designing low profile, rustic facilities.

Noise

The concentration of people, vehicles, and activities at developed recreation sites will increase noise levels near the sites. The noise may displace some wildlife species, such as turkey, and may annoy people desiring solitude.

Recreation Opportunities

Construction of developed sites will increase some recreation opportunities and change the type of recreation offered. Developed opportunities may include camping, swimming, and picnicking. New development will force people seeking solitude to relocate to other parts of the Forest.

Fishing pressure may increase because new facilities accommodate more people and provide greater access to rivers, streams, and reservoirs. For people who prefer to fish in solitude, the increased activity may decrease the quality of the fishing experience.

Plans and Programs of Other Agencies

An increased level of recreation development will benefit local economies due to more visitors patronizing local businesses and to increased revenues for local government from their 25 percent share of federal receipts.

PROBLEM 2: PROVIDING DISPERSED RECREATION

The range of dispersed recreation opportunities is affected by how the forest is developed for other uses. As an example, developed recreation sites, timber harvest, and the related road construction increase opportunities for dispersed motorized recreation, but decrease non-motorized opportunities. The area in each class of the Recreation Opportunity Spectrum (ROS) indicates the quality of recreation experience provided by each alternative from activities occurring in the alternative (see the glossary for definitions of ROS classes).

Table 4-4 Dispersed Recreation Use and Area by ROS Class, Planned for Decade 1

	Present Condition	Alternatives					
		A	B	C	D	(D2)	E
Dispersed Recreation Use Total (MRVDs)	12,520	16,622	11,622	10,247	12,890	11,570	15,146
Semi-Primitive Non-Motorized (M Acres)	*	10	11	15	30	30	10
Semi-Primitive Motorized (M Acres)	*	296	220	76	131	131	139
Roaded Natural (M Acres)	*	197	272	412	343	343	353
Rural (M Acres)	*	1	1	1	1	1	1

* Present condition is approximated by Alternative B. Mapping of the present Recreation Opportunity Spectrum classes has not been completed forest-wide.

Alternatives A and E have planned dispersed use about 40 percent higher than the other alternatives because they both emphasize dispersed recreation opportunities. This emphasis is the primary recreation objective of Alternative A, while in Alternative E the dispersed recreation emphasis is shared with a corresponding high emphasis in developed recreation.

The area by ROS class indicates what type of dispersed recreation opportunities are planned in each alternative. Alternative D and the D2 variation provide the largest amount of SPNM opportunity, two to three times as much as the other alternatives. This amount is provided by Management Area 6.2 which has an intensive ten year timber management period every 40 years, with SPNM recreation opportunities being provided the remaining 30 years of the period.

Alternative C provides a higher amount of RN, and a corresponding lesser amount of SPM opportunities than the other alternatives because of the emphasis on income generating activities that result in more roads and increased human activity.

Management Practice: Dispersed Recreation Management

In addition to the opportunities provided by forest management in general, the practice of dispersed recreation includes activities such as (1) trail construction for hiking, ski touring, and off-road vehicle use; (2) construction of scenic drives and access roads to overlooks; (3) visitor information services; and (4) road closures and road maintenance for hunting and fishing.

Trails provide travelways for recreation activities such as hunting, fishing, trailbike riding, skiing, viewing scenery, snowmobiling, and horseback riding. These activities occur at different times of the year and require trails built to different specifications to accommodate their use. New trails are classified as follows:

Motorized summer - ORV's such as trail bikes and all-terrain vehicles (ATV)
Pedestrian summer - hiking
Motorized winter - snowmobile and ATV

All trail construction involves the following activities:

- clearing the trail right-of-way of vegetation, roots, and obstructions such as rocks;
- creating a flat treadway of varying widths as needed for the particular activity;
- constructing structures such as bridges, culverts, dips, and ditches to control water and runoff near or on the trail;
- installing tread surfacing such as rocks, gravel, or others to protect the tread surface from trail use;
- restoring and/or revegating areas cleared during trail construction;
- constructing needed trailhead parking lots.

Trails used by dispersed recreationists also require periodic maintenance, particularly ORV trails.

Trail construction also involves the utilization of existing travelways to serve as connectors between existing and planned loop trails. These travelways provide approximately 50 percent of the total route for all trail types except pedestrian summer.

Trail construction, trail use, and road use are the dispersed recreation activities most likely to significantly affect the environment. The following tables indicate the amount of new trails proposed in each alternative.

Table 4-5 Pedestrian Trails Proposed
(Miles)

		Alternative					
		A	B	C	D	(D2)	E
Planned	**Decade 1**	**73**	**5**	**3**	**48**	**(41)**	**73**
Projected	Decade 2	69	2	0	41	(34)	69
Projected	Decade 3	69	2	0	41	(34)	69
Projected	Decade 4	69	2	0	41	(34)	69
Projected	Decade 5	0	0	0	0	(0)	0

NOTE: Present inventory of trails is 170 miles.

Alternatives B and C show substantially less planned new trail construction than the other alternatives. In Alternative B, the current management direction of limiting capital investments is continued. In Alternative C few new trails are planned because this alternative emphasizes income generating recreation opportunities and dispersed hiking trails do not generate income.

Table 4-6 Motorized Winter Trails Proposed
(Miles)

		Alternative					
		A	B	C	D	(D2)	E
Planned	**Decade 1:**	**0**	**22**	**22**	**11**	**(11)**	**28**
Projected	Decade 2:	0	0	0	11	(11)	0
Projected	Decade 3:	0	0	0	0	(0)	0
Projected	Decade 4:	0	0	0	0	(0)	0
Projected	Decade 5:	0	0	0	0	(0)	0

NOTE: Present inventory of trails is 328 miles.

Table 4-7 Motorized Summer Trails Proposed
(Miles)

		Alternative					
		A	B	C	D	(D2)	E
Planned	**Decade 1**	**0**	**291**	**213**	**145**	**(145)**	**364**
Projected	Decade 2	0	0	0	145	(145)	0
Projected	Decade 3	0	0	0	0	(0)	0
Projected	Decade 4	0	0	0	0	(0)	0
Projected	Decade 5	0	0	0	0	(0)	0

NOTE: Present inventory of trails is 60 miles.

Alternative A plans no motorized trails because in this alternative off-road motorized opportunities are eliminated in order to emphasize non-motorized dispersed recreation opportunities.

Noise

Increased levels of noise result from some types of dispersed recreation, such as trail biking, snowmobiling, and vehicles on roads. This noise may annoy recreationists desiring a quieter environment.

Recreation Opportunities

New trails, scenic overlooks, and other dispersed recreation facilities may change recreation patterns. For example, in areas where local roads are closed, non-motorized recreation activities will predominate, such as hiking and fishing. In contrast, the recreation experience on a paved scenic highway depends on vehicles. Trails for both motorized and non-motorized use will provide increased access to formerly remote areas. Bank fishing trails along reservoirs and access points on streams will increase the fishing use and pressure.

PROBLEM 3: TIMBER MANAGEMENT

Timber management removes wood products from the Forest, establishes a new stand of trees, and increases the growth and quality of the regenerated timber stand.

Timber harvest practices in any alternative will change the Forest. The extent of change depends on the volume harvested, the harvest technique used, the topographic and spatial location of the harvest, and the resulting vegetative composition. The cumulative effect of all timber activities will, therefore, change the Forest's physical, biological, social, and economic environments.

Timber volumes generated by all cutting practices in each alternative are shown in Table 4-8. Decade 1 amounts are those actually planned to be completed in the first decade. Those shown for Decades 2 through 15 are merely projections assuming we retain the same management objectives for each alternative when we revise the Plan in 10 to 15 years.

Table 4-8 Hardwood Sawtimber and Pulpwood Volumes
(Million Board Feet and Million Cubic Feet per Decade)

	Alternatives											
	Million Board Feet						Million Cubic Feet					
Activity/Output	A	B[2]	C	D	(D2)	E	A	B	C	D	(D2)	E
Hardwood Timber												
Sawtimber												
Decade 1	**197**	**264**	**536**	**383**	**370**	**311**	**31**	**42**	**85**	**61**	**58**	**49**
Decade 2	165	345	536	462	389	280	26	55	85	73	61	44
Decade 3	335	360	536	577	509	582	53	57	85	91	80	92
Decade 4	311	385	536	591	566	520	49	61	85	93	89	82
Decade 5	330	407	536	653	623	663	52	64	85	103	98	105
Decade 10	318	306	536	522	483	465	50	48	85	82	76	73
Decade 15	258	303	536	527	526	480	41	48	85	83	83	76
Pulpwood												
Decade 1	**292**	**359**	**490**	**562**	**535**	**579**	**46**	**57**	**77**	**89**	**85**	**92**
Decade 2	324	278	490	483	516	610	51	44	77	76	82	96
Decade 3	154	263	490	368	396	208	24	42	77	57	63	49
Decade 4	178	238	449	354	339	370	28	38	71	56	54	58
Decade 5	159	216	404	292	282	227	25	34	64	46	45	36
Decade 10	171	317	389	423	422	425	27	50	61	67	67	67
Decade 15	205	320	315	418	379	375	32	51	50	66	60	59
Allowable Sale Quantity/Total Timber Volume[1]												
Decade 1	**489**	**623**	**1026**	**945**	**905**	**890**	**77**	**98**	**162**	**149**	**143**	**141**
Decade 2	489	623	1026	945	905	890	77	98	162	149	143	141
Decade 3	489	623	1026	945	905	890	77	98	162	149	143	141
Decade 4	489	623	1026	945	905	890	77	98	162	149	143	141
Decade 5	489	623	1026	945	905	890	77	98	162	149	143	141
Decade 10	489	623	1026	945	905	890	77	98	162	149	143	141
Decade 15	489	623	1026	945	905	890	77	98	162	149	143	141

1 Allowable sale quantity is the quantity of timber that may be sold from an area of land. Total timber volume includes a small volume of softwood volume which was not shown in sawtimber or pulpwood volumes.
2 The present condition is equal to those levels identified in Alternative B.

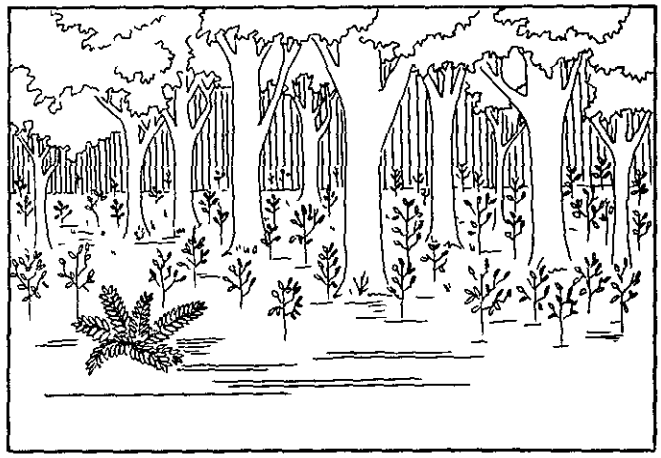
On the following pages, a description of each individual practice and its outputs is followed by discussion of the practice's significant environmental effects.

Management Practice: Even-aged Silviculture

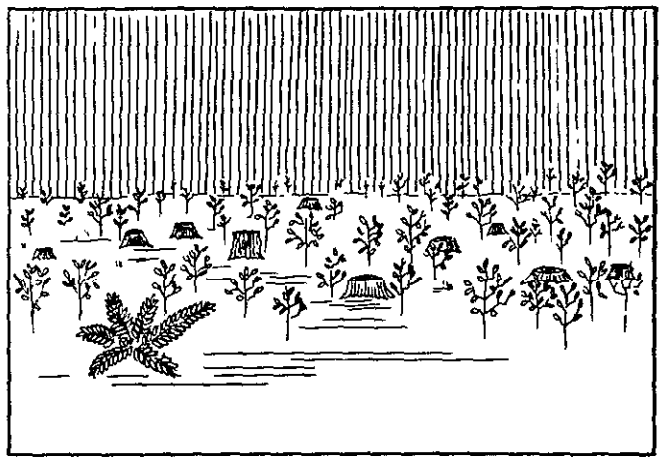
Even-aged regeneration methods include clearcuts and shelterwood removal cuts. In a clearcut regeneration harvest, all trees are removed at the same time, as illustrated in Figure 4-1.

FIGURE 4-1
Clearcut Regeneration Harvest*

Even-aged Stand Before Cutting



After Regeneration Cut



*Logging debris has been omitted for clarity

In a multiple-step regeneration harvest, such as the shelterwood method, a portion of the overstory is removed in the initial cut, or seed cut. This cut opens up the canopy to allow more sunlight to reach the forest floor. The additional sunlight and growing space enable new tree seedlings to germinate from seed produced by the remaining overstory trees. Once sufficient numbers of seedlings are established in about five years, the remaining overstory trees are removed in the removal cut. This silvicultural method is illustrated in Figure 4-2 on the following page.

Table 4-9 Area Harvested by Clearcutting and Shelterwood Cuts
(Thousand Acres per Decade)

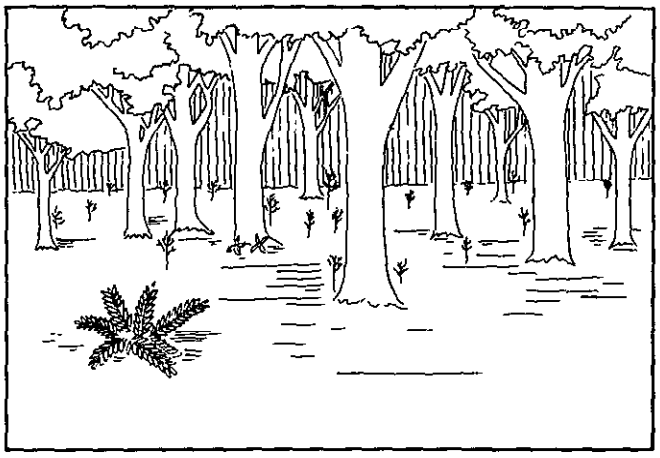
Activity/Output		Alternative A	B	C	D	(D2)	E
Clearcut							
Planned	**Decade 1**	**.3**	**3.1**	**6.7**	**3.3**	**(3.3)**	**.7**
Projected	Decade 2	.3	2.9	5.4	3.4	(2.7)	.4
Projected	Decade 3	.3	2.3	4.1	4.7	(3.8)	.8
Projected	Decade 4	.5	2.5	4.3	3.1	(3.3)	1.2
Projected	Decade 5	.5	2.4	3.6	4.0	(3.7)	1.4
Shelterwood Seed Cut							
Planned	**Decade 1**	**2.7**	**27.2**	**60.3**	**29.7**	**(29.7)**	**6.3**
Projected	Decade 2	2.7	26.1	48.6	30.6	(24.3)	3.6
Projected	Decade 3	1.8	20.7	36.9	30.6	(34.2)	7.2
Projected	Decade 4	4.5	22.5	38.7	27.9	(29.7)	10.8
Projected	Decade 5	4.5	21.6	32.4	36.0	(33.3)	12.6
Shelterwood Removal Cut							
Planned	**Decade 1**	**2.7**	**27.2**	**60.3**	**29.7**	**(29.7)**	**6.3**
Projected	Decade 2	2.7	26.1	48.6	30.6	(24.3)	3.6
Projected	Decade 3	1.8	20.7	36.9	30.6	(34.2)	7.2
Projected	Decade 4	4.5	22.5	38.7	27.9	(29.7)	10.8
Projected	Decade 5	4.5	21.6	32.4	36.0	(33.3)	12.6

Present condition = 21.4 Thousand acres of final harvest and shelterwood removal cuts per decade.

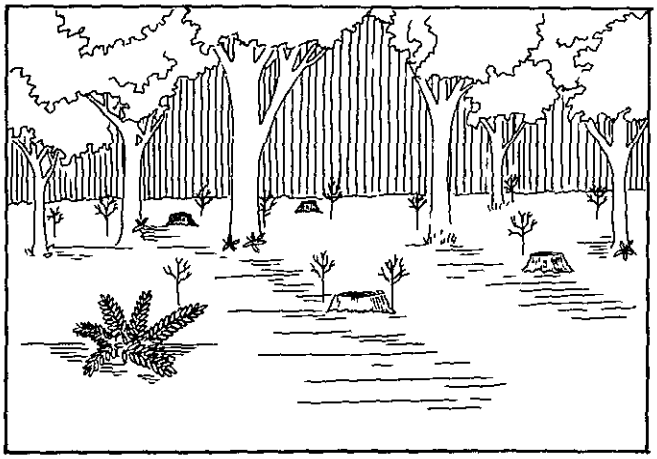
Compared to the present condition, Alternatives A and E would have the smallest area harvested by clearcutting and shelterwood cuts. Alternative A provides the smallest area due to the alternative's low production of market benefits, such as commercial timber. Alternative E emphasizes timber production but relies on selection cutting to achieve it.

FIGURE 4-2
Shelterwood Cutting Method*

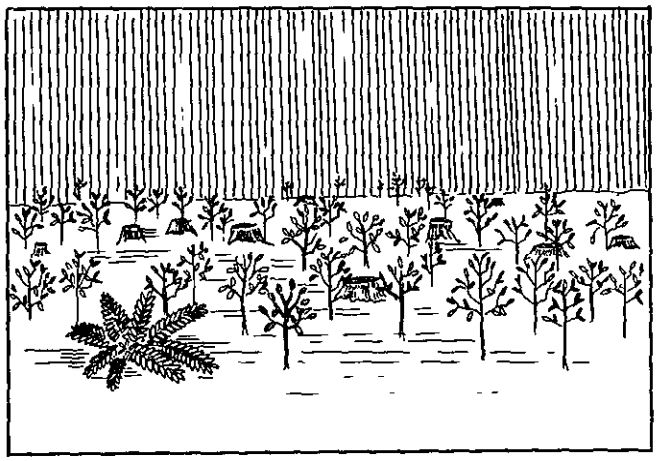
Even-aged Stand
Before Cutting



After Shelterwood
Seed Cut



After Removal
Of Shelterwood



*Logging debris has been omitted for clarity

Soils and Landform

Skidding and stacking logs directly affects soil productivity by (1) compacting the soil, (2) displacing nutrient-rich organic matter and upper mineral soil, and (3) causing accelerated erosion. Depending on the severity of these effects, future timber production on the disturbed areas may be reduced or eliminated, and sedimentation of streams may occur.

Soil compaction, for example, may be severe enough on 13 percent of a harvested area to reduce tree growth up to 50 percent , especially of seedings. Growth reduction may persist for 15 years. Moderately to poorly-drained soils on plateaus and bottomlands are more susceptible to compaction than other soils. See Water Quality for discussion of erosion and sedimentation.

Visual Resource

Final harvest cutting, which includes both the clearcut and shelterwood removal cut methods, significantly changes the visual environment, through both ground disturbances and changes in vegetative age-class composition.

During actual sale operations lasting one to five years, exposed soil, slash (logging debris), and logging equipment will be evident.

With extensive final harvest cutting, the visual character of forest areas may change. The change will be from a continuous forest canopy with only occasional openings to a broken forest canopy with frequent openings. Depending on the location, some breaks in the canopy may open up vistas and views, but from all viewing distances, the forest setting will appear modified.

Water Quality

Cutting trees does not affect water quality, but removing logs from the woods by skidding and truck hauling can affect water quality. The natural forest floor is disturbed or destroyed on skid trails, skid roads, log landings, and haul roads. Unprotected mineral soil is thereby exposed. The bare soil is subject to rain, surface runoff, melting snow, and wind. Erosion increases as the slope of the land increases and as the area being disturbed increase. The

potential for sedimentation of streams increases the closer disturbed areas are to streams. Use of the stream for fish production, drinking water, and recreation may be impaired if excessive amounts of sediment are transported to the stream.

Noise

Noise from chain saws, log skidders, and heavy truck traffic occurs in timber sale areas for up to five years.

Noise levels may vary slightly by the type of harvest, with final harvest cuts being the most noisy. When considered by individual projects, noise is local and short term, but across the Forest, the impacts are long term.

Dispersed recreationists are affected by noise. In general, higher noise levels result in a lower quality recreation experience. Noise also may displace some wildlife species.

Roads

The majority of National Forest road construction and reconstruction is needed for hauling timber products and is financed through timber sales. These roads also provide access to private oil/gas lease roads. Timber hauling and mineral development traffic may damage existing roads and increase maintenance costs. For safety reasons, a road being used for these resource activities may be closed to the public.

Vegetation

Clearcuts and shelterwood cuts result in even-aged stands of hardwood forests. Tree species which are shade intolerant (black cherry, white ash, yellow poplar, etc.) are likely to dominate the young timber stand. Soil drainage, animal damage, and other environmental factors also influence which trees will eventually occupy the site. These factors, especially deer browsing, also affect the vertical vegetative diversity within each stand. Vertical diversity results from the types and amount of vegetation that occur on the forest floor, in the herb layer, the shrub layer, and up through the lower tree layer to the overstory canopy.

The long-term, forest-wide effect of even-aged silviculture on vegetative patterns is to create horizontal diversity, which results from differences in vegetation between stands. In crossing the forest, one would encounter seedling/sapling stands interspersed with poletimber stands (trees aged 30 to 50 years old and 6 to 10 inches in diameter), young sawtimber stands (trees 50 to 70 years old and 12 to 16 inches in diameter), mature sawtimber stands (trees 70 to 100 years old and 16+ inches in diameter), and old-growth stands (trees over a century old, which may attain a diameter of two feet or more). The predominantly even-aged forest which currently exists would increase in age-class diversity over time as even-aged silviculture is applied.

Wildlife

Even-aged silviculture increases horizontal habitat diversity. Shelterwood cutting will be utilized in most timber stands. A two-cut shelterwood will be the most common cutting; however, three-cut shelterwoods will also be utilized where desirable to meet wildlife management or visual quality objectives. Final removal cuttings will usually range in size from 10 to 40 acres and be well distributed.

Different wildlife species benefit from the habitat types available at different times during the growth cycle of trees. For example, the regenerating stage, which is present from 1 to 10 years following final harvest cutting, benefits the white-tailed deer, red fox, snowshoe hare, ruffed grouse, American woodcock, and the chestnut-sided warbler. As the timber stands mature and become sawtimber size (12 inches or greater in diameter), wildlife values change and other species benefit, such as the gray squirrel, raccoon, gray fox, solitary vireo, red-shouldered hawk, hermit thrush, and wild turkey. Old-growth timber stands, which are over a century old, benefit several species, including the pileated woodpecker, barred owl, and great blue heron. Species associated with mature mixed coniferous-deciduous forest, including the black-throated green warbler and hermit thrush, will decrease in areas where hemlock is removed in a shelterwood cutting to encourage the establishment of hardwood seedlings.

Most wildlife species can maintain moderate or high population levels given a combination of vegetation successional stages of forest habitat. Specific population densities in a management area are related directly to the vegetative manipulation. The most important results of vegetative manipulation which affects wildlife are the spatial distribution of the cutting, the age class distribution including timber types, species composition, stocking level, and the percent of old growth habitat available.

Harvest activities will create some short-term local disturbances by interrupting travel patterns or displacing some wildlife species. The particular species disturbed or displaced would depend on the type of vegetation being harvested and the species' sensitivity to human activities. The amount of disturbance or displacement is directly related to the total acres harvested annually.

Recreation Opportunities

Final harvest cutting changes recreation opportunities in the short term because of the impact on visual resources, road use, and noise. Recreation dependent on a natural appearing setting and some feeling of isolation is lost for a period of 10 to 15 years during and after the cut.

Over the long-term, some recreation opportunities increase as a result of final harvest cutting. For example, deer populations are much higher in recently regenerated stands, so hunting opportunities increase compared to that available where there are only old stands. Opportunities for fuelwood gathering and berrypicking also increase. Recreation experiences associated with sawtimber-sized stands are lost for approximately 50 years following a final harvest cut.

Plans and Programs of Other Agencies

When harvest volumes increase, so does timber hauling on local and state roads, thus requiring more township, county, and state road maintenance.

As mentioned in the Timber Management Problem, deer populations on the Allegheny National Forest (ANF) exceed the land's carrying capacity and seriously affect our ability to regenerate timber. The ANF has agreed

with the Pennsylvania Game Commission to reduce deer populations and concurrently increase the final harvest acreage in order to improve timber regeneration success (without having to rely on expensive regeneration investments) and still maintain a quality deer hunting experience. The ANF has agreed to final harvest at least 2,000 acres per year. Alternatives which meet or exceed this come closer to fulfilling our mutual deer management/timber management objectives.

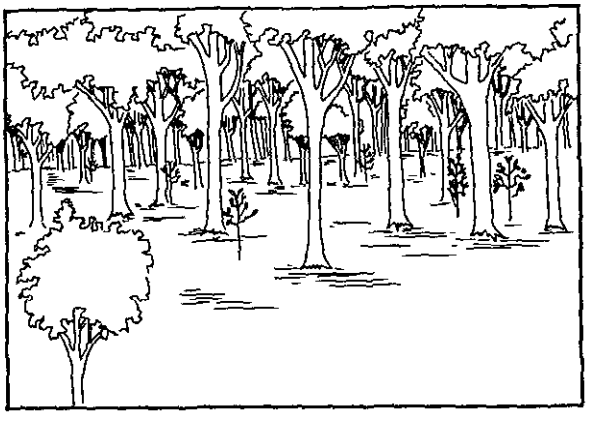
Local governments receive 25 percent of timber sale receipts generated from National Forest land within their administrative boundaries. The amount of payments will depend on the value and quantity of timber to be sold under each alternative. See discussion on Plans and Programs of Other Agencies in Section D of this chapter (Page 4-119) for payments to local governments expected under each alternative.

Management Practice: Uneven-aged Silviculture and Even-aged Thinning

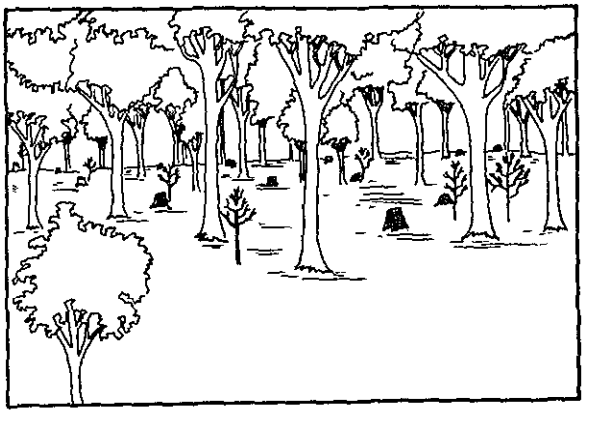
This practice includes all silvicultural systems that remove individual trees or small groups of trees (less than half an acre). Thinnings remove the less desirable trees in order to give the remaining trees more growing space, as illustrated in Figure 4-3. Growth is thereby concentrated on the best trees until they are harvested.

FIGURE 4-3
Intermediate Thinning Cut*

Even-aged Stand Before Cutting



After Thinning Cut

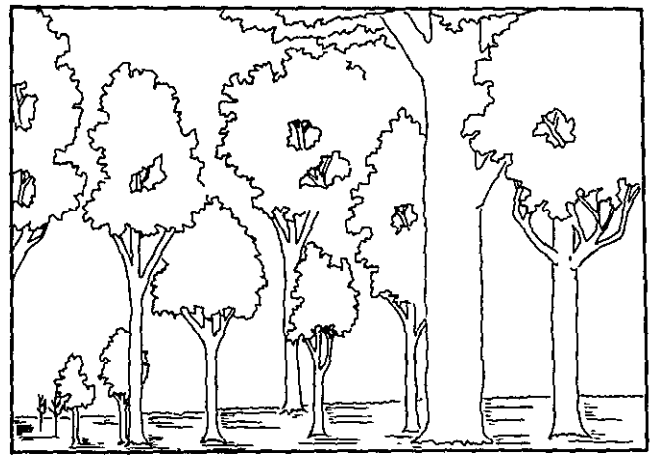


*Logging debris has been omitted for clarity

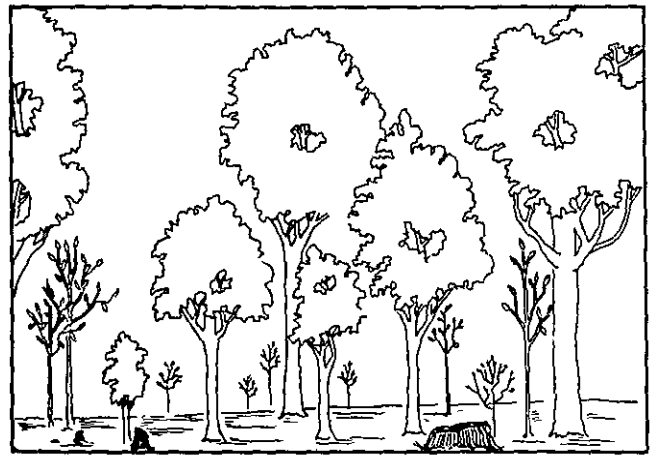
Selection cuts favor tree species that reproduce only under the full-shade of a forest canopy. They tend to promote development of a stand with many different age classes, or an uneven-aged stand. Individual tree and group selection cuts are illustrated in Figures 4-4 and 4-5.

FIGURE 4-4
Selection Cutting*

Uneven-aged Stand
Before Cutting



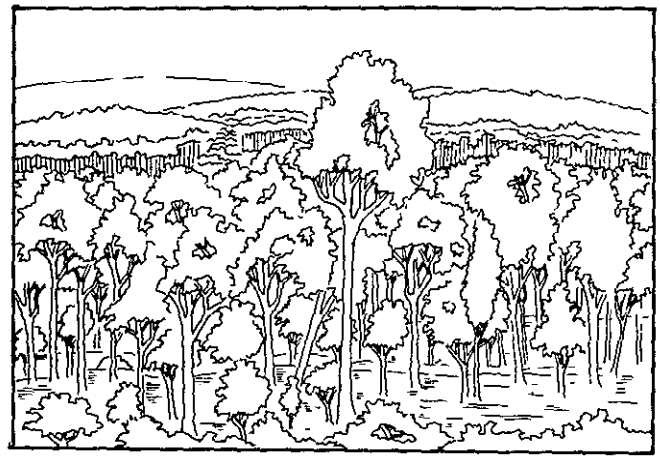
After Individual
Tree Selection Cut



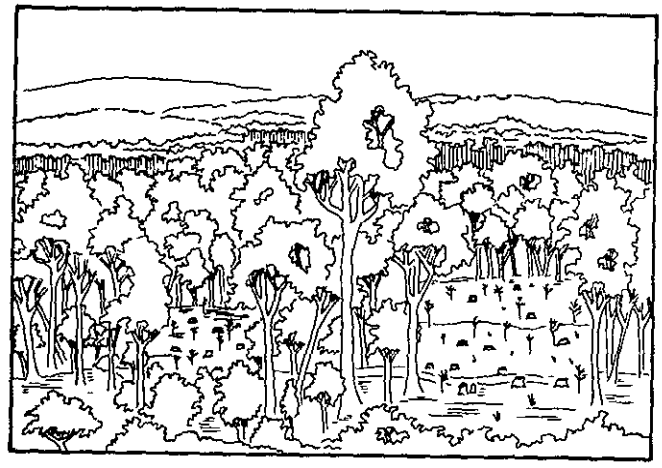
*Logging debris has been omitted for clarity.

FIGURE 4-5
Group Selection Cutting*

Uneven-aged Stand Before Cut



After Group Selection Cutting



**Logging debris has been omitted for clarity.*

Deer browsing can have a dramatic effect on the success of uneven-aged silviculture. Use of appropriate regeneration activities and selection of appropriate areas where deer have a lower impact will help ensure regeneration success. The effects of the agreement with the Pennsylvania Game Commission to reduce the deer herd should also improve uneven-aged silviculture success with time. See Tables 4-10 and 4-11 for the acres receiving thinnings and selection cuts.

Effects on Soils and Landform, Water Quality, Noise, Roads, and Plans and Programs of other Agencies are qualitatively similar to effects from even-aged silviculture, discussed in the previous section. Cumulative effects may differ and are discussed in Section D.

Table 4-10 Area Thinned (Thousand Acres)

Activity/Output			Alternative					
			A	B	C	D	(D2)	E
Planned	**Decade**	**1:**	**11**	**11**	**6**	**94**	**(95)**	**43**
Projected	Decade	2:	20	19	3	78	(104)	100
Projected	Decade	3:	8	16	40	25	(62)	41
Projected	Decade	4:	20	21	7	77	(86)	87
Projected	Decade	5:	1	18	39	26	(42)	14

Present Condition = 60.1 Thousand Acres per decade.

In the first decade, a larger area is planned for thinning under Alternatives D and E than under Alternatives A, B, and C. This results from the volume objective in Alternative D and the longer rotations in Alternative E.

Table 4-11 Area Harvested by Selection Cutting (Thousand Acres)

Activity/Output			Alternative					
			A	B	C	D	(D2)	E
Planned	**Decade**	**1:**	**67**	**18**	**2**	**6**	**(6)**	**107**
Projected	Decade	2:	64	0	0	0	(0)	67
Projected	Decade	3:	67	18	6	6	(6)	108
Projected	Decade	4:	64	0	5	0	(0)	67
Projected	Decade	5:	67	18	6	6	(6)	108

Present Condition = 2.9 Thousand Acres per decade.

Alternatives A and E which emphasize visual quality and longer rotations increase the area managed by selection cutting in the first decade, compared to the rest of the alternatives and the present condition.

Vegetation

Selection cuts result in uneven-aged timber stands. Each selection cut increases the amount of sunlight reaching the forest floor, which causes seeds to

germinate and stumps to sprout. A new age class is thus created in the stand, assuming deer or rodents do not eliminate the new growth. Individual tree selection cuts perpetuate shade tolerant species, such as beech, hemlock, and sugar maple. Although selection cuts of small patches of trees will tend to perpetuate shade tolerant species, trees needing sunlight are likely to compose a somewhat greater part of the forest than they would if only individual trees are cut.

The long-term, forest-wide effect of selection cutting is to create relatively little horizontal diversity between stands. However, if deer browsing is controlled, vertical vegetative diversity within each stand is high.

Shade intolerant species, such as black cherry and ash, have historically had considerably greater economic value than tolerant species, such as beech and hemlock. If historic and current values continue, the value of future timber crops would be much greater if even-aged regeneration techniques are employed rather than uneven-aged (selection cut) silviculture.

Thinning, or intermediate cuts, often tend to increase the amount of cherry and other intolerant species in the residual stand, but this change is modest (5 to 10 percent). Vertical vegetative diversity resulting from a thinning will vary depending upon deer browsing. Thinning has fewer long-term, forest-wide impacts on vegetative diversity than any regeneration practice.

Wildlife

An increase in vertical habitat diversity will occur where uneven-aged management is applied to a timber stand. The wildlife species that will benefit are those associated with habitats available in biologically mature or old-growth forests, such as the pileated woodpecker, barred owl, and the great blue heron. Selection cutting provides food for deer, as well as a diversity of conditions favoring important food-producing tree species that are minor components of a timber stand. This diversity in species lessens the chance that, in a single year, weather, insects, or disease could prevent all species from producing acorns and seeds for wildlife to eat. Timber stands can also be treated to encourage tree and shrub species that

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provide important conifer and broadleaf evergreen cover for many animals, including the magnolia warbler, ruffed grouse, black bear, and white-tailed deer.

Harvest activities will create some short-term local disturbances by interrupting travel patterns or displacing some species.

Management Practice: Road Construction, Resurfacing, and Management

This practice includes road construction, major reconstruction, resurfacing, and road management.

Construction includes clearing and grubbing of right-of-way timber, excavation and earthwork, installation of drainage structures, placement of surfacing material, erosion control work, and installation of gates and signs. Reconstruction requires the same activities as construction, but a reconstructed road is built on an existing location, such as an old woods road, rather than on a new location.

Resurfacing includes grading, replacement of surfacing material, and replacement of culverts and other drainage facilities. Management of a road involves opening and closing the road to accomplish resource management objectives, such as the protection of wildlife during breeding seasons.

The following tables show the planned and projected system road needs for the various alternatives. Roads constructed (Table 4-12) are new roads needed. Roads reconstructed (Table 4-13) are jeep or old woods roads that are not currently on the transportation system but will be needed for resource management purposes.

Table 4-12 Construction of Forest Service Roads (Miles)

Alternative	Road Standard[1]	Decade Planned: 1	Projected 2	3	4	5
A	TSL A	**0**	0	0	0	0
	TSL B	**0**	0	0	0	0
	TSL C	**49**	47	9	7	7
	TSL D	**163**	157	29	23	23
	Temp.	**13**	13	13	13	13
B	TSL A	**0**	0	0	0	0
	TSL B	**0**	0	0	0	0
	TSL C	**18**	10	10	10	8
	TSL D	**136**	78	78	78	64
	Temp.	**17**	17	17	17	17
C	TSL A	**2**	1	3	3	0
	TSL B	**1**	0	0	0	0
	TSL C	**28**	17	30	18	15
	TSL D	**144**	88	153	90	77
	Temp.	**10**	10	10	10	10
D	TSL A	**1**	1	1	1	0
	TSL B	**1**	1	0	0	0
	TSL C	**24**	13	4	7	7
	TSL D	**213**	121	33	64	61
	Temp.	**17**	17	17	17	17
(D2)	TSL A	**(1)**	(1)	(1)	(1)	(0)
	TSL B	**(1)**	(1)	(0)	(0)	(0)
	TSL C	**(25)**	(19)	(6)	(6)	(3)
	TSL D	**(222)**	(168)	(57)	(51)	(29)
	Temp.	**(17)**	(17)	(17)	(17)	(17)
E	TSL A	**1**	1	10	1	0
	TSL B	**1**	0	1	0	0
	TSL C	**78**	89	9	10	6
	TSL D	**138**	158	15	18	10
	Temp.	**17**	17	17	17	17
Present Condition	TSL A	**0**				
	TSL B	**0**				
	TSL C	**50**				
	TSL D	**120**				
	Temp.	**40**				

These figures are decade totals based on recent construction activity.

1 TSL = Traffic Service Level (key criteria for design standard); see definition in Chapter 3.

Table 4-13 Reconstruction of Forest Service Roads (Miles)

Alternative	Road Standard[1]	Decade Planned: 1	Projected 2	3	4	5
A	TSL A	0	0	0	0	0
	TSL B	0	0	0	0	0
	TSL C	20	29	3	3	3
	TSL D	23	22	4	3	3
	Temp.	0	0	0	0	0
B	TSL A	0	0	0	0	0
	TSL B	0	0	0	0	0
	TSL C	10	6	6	6	5
	TSL D	23	13	13	13	11
	Temp.	0	0	0	0	0
C	TSL A	0	0	0	0	0
	TSL B	0	0	0	0	0
	TSL C	19	12	20	12	10
	TSL D	26	16	28	16	14
	Temp.	0	0	0	0	0
D	TSL A	0	0	0	0	0
	TSL B	0	0	0	0	0
	TSL C	23	13	4	7	6
	TSL D	74	42	12	22	21
	Temp.	0	0	0	0	0
(D2)	TSL A	(0)	(0)	(0)	(0)	(0)
	TSL B	(0)	(0)	(0)	(0)	(0)
	TSL C	(24)	(18)	(6)	(5)	(3)
	TSL D	(77)	(58)	(20)	(18)	(10)
	Temp.	(0)	(0)	(0)	(0)	(0)
E	TSL A	0	0	0	0	0
	TSL B	0	0	0	0	0
	TSL C	37	42	4	5	3
	TSL D	21	24	2	3	2
	Temp.	0	0	0	0	0
Present Condition	TSL A	0				
	TSL B	0	These figures are decade totals based on recent reconstruction activity.			
	TSL C	29				
	TSL D	56				
	Temp.	20				

1 TSL = Traffic Service Level (key criteria for design standard); see definition in Chapter 3 (Page 3-12).

The low level of road construction in Alternative A compared to other alternatives is primarily a result of the low volume of timber being harvested compared to other alternatives. The greater need for higher standard roads in Alternative A compared to Alternative B reflects the greater amount of uneven-aged timber management practiced in Alternative A. Access is needed more often to the same area, which requires a higher standard road.

The size of road system in Alternative C is primarily a reflection of the high volume of timber harvested in Alternative C compared to other alternatives.

There are more roads to be constructed in the first two decades for Alternative D because there are more acres to be thinned in these two decades than in any other alternative (See Table 4-10).

Alternative E has the most miles of Level C road because of the high emphasis on uneven-aged management or selective cutting where access will be needed more often in the same area.

Soils and Landform

Road construction directly affects soil productivity by eliminating vegetation on the roadway itself and eliminating timber production from the right-of-way. Depending on the use of stone surfacing and road closure practices, this loss of productivity may be irreversible on a short-term or even long-term basis. Construction and reconstruction also indirectly affect soil productivity by removing soils overlying the pits from which stone surfacing is taken. Roads and rock pit excavation will alter landforms. This alteration of landforms will be irreversible, especially on steep slopes and low, wet areas. See discussion on Soils and Landform under Management Practice: Mineral Materials.

Energy Minerals

National Forest roads provide the main access to areas of oil and gas development on the Forest. These arterial or collector roads reduce the amount of new construction needed to access leases. This National Forest road network facilitates production of the energy mineral resource. Production costs rise when there are fewer existing roads that could be utilized by the

mineral developer. The oil and gas operator must build more roads to development areas, if National Forest roads do not provide adequate access.

Mineral Materials

Construction of new roads and reconstruction of existing roads require surfacing material. Mineral materials, such as rock, sand, or gravel, will be irreversibly consumed in quantities proportional to the amount of road building. Presently, the most accessible and least costly rock sources are being used on the Forest. As these sources are exhausted, new sources that are more expensive to develop will be used. Road surfacing costs will thereby increase.

Visual Resources

Construction of high standard roads (TSL A, B, C) will significantly modify the visual environment. Foreground views will change from a continuous natural forest setting to one with open corridors through the forest canopy and with slightly altered terrain features.

In most alternatives, the increase in roads will generally accommodate increased use and will indirectly affect the visual resource through the presence of more people and resource management activities.

Water Quality

Roads are an important source of sediment in a managed forest. Sediment is produced on a short-term basis while the road is being constructed. Over the long term, a road can be a chronic source of sediment, depending on the type of surfacing, location, and the use and management of the road.

During construction, mineral soil is exposed over large areas when the right-of-way is cleared and excavated. Soil particles unprotected by leaf litter and vegetation are readily detached by rain and transported to water channels. The type of material used to surface a road affects the long term production of sediment. Roads that are paved with asphalt produce little sediment. In contrast, roads that are surfaced with crushed, native stone produce sediment chronically as the running surface breaks down from vehicular use and natural erosion processes.

Environmental Consequences: Road

The amount of eroded material that reaches a stream is affected by the location of the road in relation to water channels and by the number of stream crossings the road makes. When a road is located parallel and adjacent to a stream, road runoff cannot be effectively intercepted and sediment removed before the runoff enters the stream. In contrast, when a road is located on top of a ridge away from streams, the natural sediment filtering ability of the forest floor can be used to trap sediment in runoff before it reaches a stream. Stream crossings provide points for direct entry of sediment into streams.

The use and management of roads affect sediment production in several ways. For example, surfacing material breaks down faster when roads carry heavy truck traffic rather than passenger vehicles or light trucks. Roads that are open year round generally produce more sediment than roads that are closed for most of the year. Temporary roads that are used for a season, then stabilized and revegetated, produce little long-term sediment.

Noise

Noise is generated during road construction by equipment, such as bulldozers, jackhammers and dynamite, backhoes, trucks, and graders. This noise is generally of short duration (one construction season or less). Roads are generally closed to the public during construction as a safety precaution. Wildlife and recreation users desiring a quiet environment will be displaced during this period.

After construction, noise is generated by vehicular use on the road, if it is open to traffic. Vehicles may include passenger cars and trucks, logging trucks, and oil and gas equipment.

Roads

Construction of new roads will increase the mileage of Forest Service system roads. Planning and developing new roads based on the Traffic Service Level concept will tie road design standards and road management directly to resource management objectives. Closing roads and resurfacing roads will protect the investment made in the roads and insure that roads will serve management objectives.

Wildlife

Road construction and reconstruction removes wooded habitat for wildlife. Wooded habitat contains mast producing trees, conifer cover, brood habitat, den trees, and snags. The canopy is fragmented and the native ground vegetation is removed. The edge created by roads benefits a few wildlife species, such as the indigo bunting and song sparrow. The planting of introduced grasses and legumes cannot compare in wildlife value to the large amount of biomass lost when the trees are removed.

Road management is an important tool in managing wildlife populations. Roads opened during the hunting season can have either positive or negative effects on wildlife. Positive effects include easier acccess for hunters to harvest surplus animals, especially white-tailed deer. Animal populations are thereby kept in balance with available habitat. On the other hand, a high degree of accessibility can result in the overharvesting of some species, especially wild turkey and black bear, which will decrease production in succeeding years.

Roads that remain open can negatively affect wildlife due to the easy access provided for public use. Human activity can negatively impact wildlife during the breeding, nesting, and young rearing seasons and during adverse winter weather periods. Nest abandonment by the wild turkey, ruffed grouse, raptors, and waterfowl, and the displacement of wild turkeys from brood habitat can occur. Severe winter weather is particularly stressful on white-tailed deer and wild turkeys. Mortality can increase during these periods due to human activities, which would have a long-term effect by decreasing future reproduction.

Recreation Opportunities

Road construction affects recreation opportunities. Where access is increased and roads are open, motorized recreation will increase while non-motorized recreation will decline. Where new roads are constructed, roaded-natural opportunities, such as fuelwood gathering and deer hunting, will increase while semi-primitive opportunities, such as hiking and backpacking, will decrease as a result of splitting the forest into smaller, unroaded parcels. The amount, kind, and

density of roads may also cause conflicts between motorized and non-motorized recreation users.

Management Practice: Herbicide Treatment

Hayscented and New York fern groundcovers inhibit timber regeneration. Stands with these groundcovers often have 50 to 90 percent fewer desirable tree seedlings than normal. Seedlings grow poorly and usually die. Striped maple and beech suckers, where abundant, tend to dominate and crowd out desirable trees. These weeds are currently established on about 50 percent of the Forest.

Where either or both of these conditions occur, the Forest may use an herbicide registered by U.S. Environmental Protection Agency to control or eliminate the undesired condition. Currently, glyphosate, manufactured by Monsanto Agricultural Products as "Roundup," is the herbicide of choice. It is applied mixed with a water carrier, with or without an adjuvant. An adjuvant is any substance added to the spray tank, separate from the herbicide formulation, that improves the herbicide's performance. Adjuvants might include stickers, surfactants, wetter-spreaders, and penetration enhancers.

As they become available, other chemicals with better ecologic and economic characteristics may replace or be mixed with the Roundup formulation of glyphosate. The mixture of weeds encountered may influence the herbicide(s) selected. Information on the fate of herbicides in the environment and potential human health concerns will be updated through site specific environmental analyses prepared annually.

To regenerate a new stand of trees in the area with an undesirable understory, the understory is first removed. Herbicide is applied, using moderate pressure air blast sprayers mounted on rubber-tired skidders, to control herbaceous and woody stem plants under ten feet tall. The sprayers are capable of spraying 25 to 60 feet to each side and to a height of 10 to 25 feet. Treating individual stems by basal spray, frill, or injection controls larger woody stems. In the year following the spraying, a shelterwood cut is made. Because the dense understory has been removed, tree seeds are able to germinate and establish themselves. Once sufficient numbers of tree seedlings are established, the remaining overstory trees are harvested.

Table 4-14 Area with Chemical Removal of Undesirable Understories (Thousands of Acres)

Activity/Output			Alternative				
			A	B	C	D	(D2)	E
Planned	**Decade**	**1:**	**31**	**0**	**28**	**20**	**(20)**	**48**
Projected	Decade	2:	29	0	28	18	(15)	31
Projected	Decade	3:	13	0	23	28	(22)	13
Projected	Decade	4:	13	0	24	16	(19)	12
Projected	Decade	5:	14	0	19	22	(21)	17

Present Condition = 0 acres per decade.

All alternatives, except Alternative B, would use herbicide as a tool to manage commercial stands. Alternatives A and E use the highest amount because of their large acreages of selection cutting. The number of acres treated subsequently decreases because less herbicide will be needed following the first entry into a stand. Since selection cuts will occur every 20 years, encroachment from undesirable vegetation should not return to its original condition. Alternative B does not use herbicides as it was designed to reflect current management direction.

Herbicide use would have significant effects on the Visual Resource and Vegetation, which are described below. Effects of herbicide use on human health is also discussed below, although no significant adverse effects on human health are expected. This information is provided here to fully disclose to the reader the possible effects of herbicides and, specifically, the effects of the Roundup formulation of glyphosate.

Visual Resource

Using herbicide to control or eliminate the undesirable understory would affect visual quality for one to three years. Areas are treated in August or early September and would show little or no visual effect until the following spring. The foliage of dying understory would coincide with the natural fall coloration and defoliation.

The first spring following treatment, the lack of understory in treated area would contrast with the emerging green understory of adjacent areas. It would

take two or three years for tree and grass seeds stored in the litter to grow sufficiently to resemble an untreated understory.

In the long run, successful reforestation will replace a lush, undesirable understory with growing trees in a variety of age classes.

Vegetation

Plants absorb glyphosate primarily through the foliage. High humidity and the presence of surfactants increase absorption. Once absorbed by the plant tissue, glyphosate translocates throughout the plant, including the roots and rhizomes where it inhibits sprouting or further growth. Glyphosate remains stable within the plant tissue and is not metabolized.

Roundup is a broad spectrum herbicide which kills fern, striped maple, beech, most tree seedlings, and other plants. In the growing season following treatment, seeds stored in the soil, new seed from any existing overstory trees, or seed transported to the site germinate and revegetate the site. Within 5 to 10 years, seedlings will occupy the site.

Herbicide application has both short-term and long-term effects on vertical vegetative diversity. During the first growing season following application, a short-term change would occur in vertical diversity due to the change from an undesirable understory to either a sparsely stocked or a desirable understory of small seedings. Over the long term, vertical diversity would increase as more seedlings and shrubs become established in the understory. Growth of the desirable understory would be enhanced by silvicultural practices, such as thinnings.

Beginning in 1982, field tests of Roundup's effectiveness in controlling undesirable understory vegetation were conducted on the Allegheny National Forest. In 1982, 89 acres were treated and, in 1983, 404 acres. Results are incomplete. The sites done in 1982 responded as expected, resulting in a complete kill of both ferns and beech understory. Subsequent regeneration was excellent, and the shelterwood seed cut has been made. Results on sites sprayed in 1983 varied from site to site. Analysis of variations is not

complete, but several factors contributed to poor results on some sites, including:

- Spraying too soon before a rain;
- Not spraying high enough on striped maple;
- Spraying too small a dosage;
- Using stream water for mixing.

Effects on Human Health

Of the 20 chronic toxicity tests for glyphosate conducted by the registrant (Monsanto) and cited by EPA, six were negative, one established no-observable-effect levels, three developed LD50 information, and two tests reported some eye and skin irritation. Information restrictions to protect trade secrets bars full description and discussions of these 20 tests. Most of the data about human health effects and environmental impacts of glyphosate and Roundup are considered trade secrets by EPA. Where "inert" ingredients are more toxic than the active ingredients and the data are confidential, a comprehensive discussion of their toxicity and environmental fate is not possible.

Recent studies of the oncogenicity, or tumor-producing ability, of glyphosate led EPA to consider it to be a weak cancer-causing agent. However, based on the information currently available, EPA does not expect any significant risk from the level of glyphosate to which humans are likely to be exposed.

Glyphosate tested alone classifies as slightly irritating to skin and eyes. Similar tests of Roundup found it to be a more serious irritant. An EPA investigation reported than Roundup has caused skin and eye irritation at normal application rates. The suspected cause is the surfactant in Roundup.

Environmental exposures occur when people contact spray or sprayed foliage, inhale spray mist, eat plants or animals contaminated with herbicide, or drink contaminated water. For casual visitors, inhalation would be negiligible because the vapor pressure of glyphosate is negligible.

The reported exposure levels for toxic effects observed in experimental animals are considerably higher than levels estimated for Forest Service applications. A 31

mg/kg exposure will not result in adverse acute effects. Allowing a 100-fold margin for safety, estimated human exposure from ingesting water, game, and plant material are well below 0.3 mg/kg per day.

Long-term studies of effects of feeding small doses or tissue accumulation show no abnormal mutation, birth defects or nervous disorders.

Management Practice: Fertilization and Fencing

In some areas of the Forest, large numbers of deer browse young trees so heavily that new stands of timber cannot be established. Aerial fertilization of newly harvested areas provides a boost of nutrients which promotes rapid height growth of seedlings. This rapid growth puts the young trees above the reach of the deer before their browsing damages or kills the trees. Another technique used to prevent deer damage is fencing. Wire-mesh or electric fence is placed around a newly-cut area to exclude deer and prevent overbrowsing. Once the new stand of trees is above the reach of deer, the fence is removed.

Table 4-15 Area Fertilized or Fenced
(Thousand Acres per Decade)

			Alternatives					
			A	B	C	D	(D2)	E
Fertilization								
Planned	**Decade**	**1**	**0**	**18**	**49**	**25**	**(25)**	**2**
Projected	Decade	2	0	14	47	14	(13)	2
Projected	Decade	3	0	16	30	34	(21)	2
Projected	Decade	4	2	12	8	15	(16)	4
Projected	Decade	5	0	6	6	8	(7)	2
Fencing								
Planned	**Decade**	**1**	**11**	**6**	**6**	**4**	**(4)**	**10**
Projected	Decade	2	7	4	4	4	(3)	6
Projected	Decade	3	8	3	3	3	(3)	7
Projected	Decade	4	5	1	4	2	(2)	4
Projected	Decade	5	4	2	2	2	(2)	3

Present Condition = 1 Thousand Acres fenced per decade; 8 Thousand Acres fertilized per decade.

Alternatives A and E use the highest amount of fencing in the first decade and are much higher than the present condition. This level of fencing reflects the greater

use of uneven-aged silviculture, which relies on fencing to improve regeneration success in areas with high deer populations. Likewise, Alternatives A and E have the least amounts of fertilization in the first decade, because of the reliance on uneven-aged silviculture. In contrast, Alternative C requires the highest level of fertilization in the first decade due to the large area being managed by even-aged silviculture.

Vegetation

Fertilization. Generally, shade tolerant species do not respond to fertilization, but shade intolerant species, especially black cherry, respond markedly. Height growth is accelerated for about three growing seasons. Species diversity within a stand is likely to change somewhat because cherry is very responsive but tolerant species are relatively unresponsive.

At the extreme, fertilization could make the difference between establishing a new timber stand and establishing a savannah consisting of fern, aster, goldenrod, etc. More commonly, fertilization results in less diverse stands which attain maturity in less time.

Fencing. When deer are fenced out of a stand, both the quantity and number of species of tree seedlings increase. At the extreme, fencing may result in establishing a timber stand composed of 12 to 20 tree species, whereas the same site unfenced may support only a savannah consisting of fern, grass, aster, etc.

Fencing may be used in conjunction with selection cuts. When properly used, fencing would allow another age-class of seedlings to become established within a decade following the selection cut. Shade-tolerant trees would be more common than intolerant trees in the regenerated area.

PROBLEM 4: WILDLIFE HABITAT

The forest provides habitat for many different species of wildlife. Forest vegetation is the most important determinant of the habitat available and, consequently, of the types of animals that inhabit the forest. The diversity of forest vegetation and wildlife is primarily a result of the timber management practiced on the forest. Practices specifically designed to improve wildlife habitat may also be used in wildlife management.

Environmental Consequences: Wildlife - Nonstructural

Effects of timber management on wildlife are discussed under the Timber Problem Statement. Management practices which primarily benefit wildlife are discussed under this problem statement.

Management Practice: Non-Structural Habitat Improvement

Non-structural improvements include constructing and enhancing wildlife openings by bulldozing, seeding, liming, fertilizing, release cutting, apple tree pruning, planting shrubs, herbicide use, and prescribed burning. Non-commercial treatment of timber stands using bulldozing or intermediate cuttings may be done to regenerate the stands or to increase the availability of wildlife food and cover. Winter cover may be established by planting conifers. Fish habitat may be improved by liming and fertilizing small impoundments.

Table 4-16 Non-structural Wildlife Habitat Improvement and Maintenance (Thousand Acres per Decade)

		Alternatives					
Activity/Output		A	B	C	D	(D2)	E
Planned	**Decade 1**	**35**	**20**	**17**	**24**	**(24)**	**31**
Projected	Decade 2	40	19	17	28	(26)	41
Projected	Decade 3	49	20	17	35	(31)	44
Projected	Decade 4	49	20	17	36	(32)	44
Projected	Decade 5	52	20	17	37	(33)	44

Present Condition = 17 Thousand Acres

Alternatives A and E show the greatest change from the present condition because of their emphasis on producing non-market goods and services.

Visual Resources

The short-term effects on visual resources from constructing a wildlife opening are similar to those described in clearcutting. In the long-term, development of permanent shrub and grass openings will produce a forest setting with a more broken canopy. Because of their small size, natural-shaped edges, permanent location, wide distribution, and the diversity of unique vegetation, these openings will enhance visual variety. During construction and immediately following the frequent maintenance operations, visual contrasts will be most evident.

Riparian Areas

Improvement of wildlife and fish habitat associated with riparian areas enhances the value of the riparian areas for the species that utilize such habitat. Other riparian-dependent activities, such as fishing and viewing wildlife, may indirectly benefit from this practice.

Vegetation

Seeding, which is commonly done on rights-of-way in oil developments and on temporary roads and log landings, increases herbaceous plant diversity for long periods of time. Conifers and/or shrubs are commonly planted in or near savannahs and turkey wintering sites. Such plantings also increase vegetative diversity for many decades.

Bulldozing or clearcutting segments of aspen stands increases horizontal diversity within individual stands, but does not increase species diversity. Releasing or pruning trees tends to maintain diverse vegetation.

Wildlife and Fish

Habitat improvements increase the production of wildlife or fish. Treatments are designed to provide habitat components that are missing or to increase the carrying capacity of existing habitat. The species that will benefit from these improvements vary depending on the management objectives for the individual areas being treated.

Recreation Opportunities

Increased numbers of game species of wildlife and fish directly affect hunting and fishing success. All recreation experiences are enhanced by seeing more wildlife.

Management Practice: Structural Wildlife Habitat Improvement

This practice includes a diversity of activities to increase the amount or quality of wildlife habitat. Such activities include:

- The construction of impoundments and potholes for wetland development;
- The installation of nesting structures for ducks, Canada geese, mammals and non-game birds;
- Creating snags for cavity nesters;
- Closing roads with gates or earthen barriers;
- Installing protective fencing to insure establishment of wildlife plantings;
- Providing drumming logs for grouse or brush piles and other downed material for small mammal cover.

Table 4-17 Structural Wildlife Habitat Improvement
(Number of Structures)

		Alternatives					
Activity/Output		A	B	C	D	(D2)	E
Planned	**Decade 1:**	**132**	**4**	**0**	**59**	**(58)**	**118**
Projected	Decade 2:	95	3	0	102	(73)	133
Projected	Decade 3:	81	3	0	140	(94)	38
Projected	Decade 4:	81	3	0	34	(33)	37
Projected	Decade 5:	81	0	0	6	(6)	0

Present Condition = Alternative B

Alternatives A and E show the largest increases above the present condition and the other alternatives because of their emphasis on non-market goods and services, such as wildlife and semi-primitive recreation.

Riparian Areas

Constructing potholes increases the amount of open water and associated riparian resources, such as wetland vegetation and waterfowl habitat. The value of existing wetland impoundments for waterfowl habitat is enhanced by manipulating water levels. The periodic drawdown of water enhances the growth of desirable emergent aquatic vegetation. Structural habitat improvement in riparian areas indirectly benefits such riparian-dependent resources as recreation opportunities, including wildlife viewing and hunting.

Wildlife

Structural improvements increase the production of wildlife by providing habitat components that are missing or by regulating public access to avoid adverse

effects to wildlife during critical seasons. For example, providing snags or nesting structures improve habitat for cavity-nesting birds and mammals, such as pileated woodpeckers, wood ducks, bluebirds, and squirrels. Fencing protects wildlife plantings from deer damage and permits habitat improvement for ruffed grouse, wild turkeys, and many other species. Potholes enhance existing wetland habitat and increase waterfowl production. Gates installed to regulate public access reduce disturbance to sensitive wildlife species and avoid the overharvest of some species, such as the wild turkey and black bear. The species that benefit from structural improvements vary depending on the individual areas being managed and the structures used to improve existing wildlife habitat.

Recreation Opportunities

See discussion of recreational opportunities under non-structural improvements.

Management Practice: Structural Fish Habitat Improvement

This practice includes a number of activities designed to increase the amount or quality of lake and stream habitat for fish, such as:

- Impoundment construction for cold water and warm water fishes;
- Lake improvements, such as structures providing cover;
- Stream improvements such as installing cover structures, stabilizing banks, removing debris, and controlling beaver colonies.

Table 4-18 Structural Fish Habitat Improvement
(Number of structures per decade)

	Alternative					
Activity/Output	A	B	C	D	(D2)	E
New warm water impoundments	5	0	0	1	(1)	1
New cold water impoundments	2	0	0	0	(0)	0
Structures in Allegheny Reservoir	2200	0	0	800	(800)	1100
Structures in stocked trout streams	100	0	0	0	(0)	0
TOTAL	2307	0	0	801	(801)	1101

Present Condition = Alternative B except approximately 160 structures have been installed in the Allegheny Reservoir during the past ten years.

Environmental Consequences: Fish - Structural

Riparian Areas

Riparian values associated with streamside zones will be lost due to construction of impoundments. The decrease in this riparian area will be offset by the creation of a new riparian area associated with a lake.

Fish

Greater numbers of fish result from creating new habitat. Improving existing habitat increases the carrying capacity of impoundments and streams, which also results in greater numbers of fish. Habitat improvement may also increase the growth rate of fish, such that larger fish are produced at an earlier age.

Recreation Opportunities

See discussion of Recreation Opportunities under Non-Structural Improvements (Page 4-44).

PROBLEM 5: PRIVATE OIL AND GAS DEVELOPMENT

Energy mineral development includes all activities necessary to extract and bring petroleum resources to market. On the Allegheny National Forest, 94 percent of the oil and gas rights are privately owned, so these activities are primarily carried out by private developers. Forest Service administration of surface disturbing activities is determined by the type of private ownership, either outstanding or reserved rights, by any specific deed provisions, and by the existence of a cooperative relationship between the oil industry and the agency.

Management Practice: Energy Mineral Development

The activities necessary for production of oil and gas include: (1) clearing of timber and other vegetation from rights-of-way and well sites; (2) construction of access roads, well sites, and support facilities, such as tank batteries; (3) construction of pipelines and electric lines; (4) drilling, hydrofracturing, and completing the wells; (5) placement of pump jacks; (6) collection of oil into storage tanks and natural gas into transmission pipelines; and (7) disposal of waste fluids produced during well drilling and fracturing, and of brine produced with the oil.

Most developments are intensive, with wells drilled approximately 450 feet apart in a grid pattern. Well sites are approximately 1/4 to 1/2-acre in size. Each well is accessed by a road, pipeline, and, often an electric line. The area occupied by these facilities is generally 15% of the total land area encompassed by the development. The roads constructed for oil/gas development are permanent and built for year-round use. They are ditched, crowned, and have a rocked surface. Culverts or lead-off ditches control the speed and volume of water leaving or crossing the road.

If a development is under secondary production, such as waterflooding, additional facilities are needed. Four water injection wells are drilled around every oil production well in a "five-spot" pattern. Water treatment and pumping facilities are also built.

The extent and location of future oil and gas development activities cannot be accurately modeled or predicted for several reasons, including lack of accurate subsurface data, fluctuations in the energy market, and changes in the supply of minerals. Several possible levels of oil/gas demand, however, have been developed based on historical activity and possible future scenarios in world and local energy markets. See Appendix B, Page B-80, for details of the assumptions used and the results of this analysis. Tables 4-19 and 4-20 display areas cleared or impacted by new oil and gas developments under the low and high demand scenarios.

Table 4-19 Area Cleared for New Well Sites, Roads, Pipelines, and Facilities (Acres)

	Decade	
	Planned	Projected
Demand Scenario	1	2
Low Demand	645	645
High Demand	6,400	6,400

Present Condition = 4,830

NOTE: The area cleared in a development is the area on which vegetation is removed and soil disturbed. Approximately 3/4 acre is cleared for each well and access road.

Table 4-20 Area Impacted by New Oil and Gas Developments (Acres)

Demand Scenario	Decade	
	Planned 1	Projected 2
Low Demand	4,300	4,300
High Demand	43,000	43,000

Present Condition = 32,300

NOTE: The area impacted includes the actual area cleared plus a 200-foot wide buffer around the developments where other resources may be affected. Approximately five acres are impacted for each well and the access road.

Soils and Landforms

Development of oil and gas will directly affect the soil resource by irretrievably removing it from timber production or modifying its use (see Table 4-19). Soil erosion will be accelerated during the construction phase. Erosion will be decreased but not eliminated after disturbed areas are stabilized. Oil and brine spills may render soils unproductive. Natural landforms will be irreversibly altered by construction, with the greatest alteration occurring on slopes requiring excavation and in areas with wet soils that require large amounts of road fill. The magnitude of effects will depend on topography and soil type.

Energy Minerals

Oil and gas development increases the Nation's supply of domestic energy resources. Production of the resource also has a positive economic effect on the mineral owner and the local economy. Because the oil and gas is extracted, the amount of known, recoverable reserves declines sharply if no new reservoirs are discovered through exploration activities.

Mineral Materials

Developers of private minerals are encouraged to use rock to surface lease roads and other facilities. This practice increases the utility of the roads and reduces

damage to forest resources. However, extraction and use of local rock sources depletes this nonrenewable resource. See discussion of effects of roads on mineral materials under the Timber Problem Statement (Page 4-34).

Visual Resource

Because of the high density of roads, pipeline rights-of-way, and well sites, the continuous forest canopy is highly modified in an oil and gas development. The canopy is broken by open corridors that criss-cross the landscape. Well openings are evident. Natural landforms themselves may be altered by construction. From the foreground, many impacts and activities are evident, such as slash, road corridors, well heads, pipelines, overhead electric lines, brine pits, tank batteries, and other facilities often used in the extraction of oil and gas.

Water Quality

Development of oil and gas creates three possible sources of surface water pollution: (1) sediment from earth disturbance, (2) chemicals in wastewaters, and (3) the oil itself. The potential for entry of any of these pollutants into surface waters is dependent on several factors, including proximity of roads, well pads, and other bare soil areas to water channels; the method of wastewater handling and disposal; and the location of oil pipelines and storage facilities in relation to waterways.

Sediment, brine, and oil pollution each have direct and indirect impacts on aquatic organisms. Direct impacts include toxic or degenerative effects on fish, the bottom-dwelling invertebrates upon which they feed, and the plants which support the entire food chain. Indirect impacts include interference with reproduction and thus the long-term survival of a species, elimination of a food supply, or destruction of important habitat.

Intensive road development can also affect water quality indirectly by alterating and expanding the natural drainage system. These changes result in greater volumes of runoff reaching streams faster, allowing for the removal and transport of larger quantities of sediment.

Environmental Consequences: Energy Minerals

Noise

High intensity noise is produced by heavy machinery, drilling rigs, and hydrofracturing during the construction and drilling phases of oil field development. This type of noise is of short duration but may displace wildlife and recreation users. During the subsequent production phase, which may last 10 to 30 years, noise is created by pump jacks, pickup trucks, and gas venting.

This type of noise is low intensity and intermittent but of long duration. Wildlife and recreation users, such as hunters, are less likely to be disturbed by production noises than by construction and drilling noises. Noise from oil/gas development occurs in areas scattered across the Forest, and will increase as mineral development increases.

Roads

Development of oil and gas increases the heavy truck traffic on Forest Service roads, which increases maintenance costs and the potential for damage to the roads. When development occurs in an unroaded area, the opportunity exists for the Forest Service and mineral owner to work cooperatively to develop a road system that will not only serve the mineral owner's needs but also that of the Forest Service. Road density for energy minerals management is much higher than that needed for forest management.

Riparian Areas

Construction of well sites and roads in streamside areas results in alteration or loss of riparian values. Earth-moving activities, by removing duff and organic matter, destroy the sediment-filtering ability of the forest floor in riparian areas. The resulting sedimentation alters water quality. Sediment deposition on streambeds results in a long term reduction of habitat for aquatic life.

Clearing of riparian and streamside vegetation may also remove important wildlife habitat. The natural functioning of floodplains can be altered by construction of facilities. Flow patterns may change or floodflows may be constricted and the flow velocity accelerated. Such changes result in increased bank and channel erosion.

Vegetation

The continuous forest canopy will be fragmented into woodlots by the roads and well clearings. Utility and road rights-of-way will have a vegetative cover of herbaceous and grass species rather than trees and other woody plants. The herbaceous cover may include non-native plants introduced in seed mixtures used for erosion control. Intensive oil/gas development limits options for managing vegetation and for providing certain types of wildlife habitat. Some types of habitat may increase, such as the edge effect between forest and openings.

Wildlife

Energy mineral development has a long-term effect on wildlife species and their habitat. Road, pipeline, and well site construction removes mast producing tree species, den trees, snags, and ground-layer vegetation. This much fragmentation of the forest results in an inordinate amount of edge created within the affected habitat type. Creating edge within a habitat type destroys the essence of the impacted habitat, as opposed to edge between two habitat types, which is the ecologically beneficial edge. The net loss of habitat capability is greater when wooded habitat is removed than is gained from planting grasses and legumes along the cleared edges of roads, well sites, and on pipeline rights-of-way.

The increased human activity resulting from the mineral development is detrimental to nesting turkeys and raptors.

Fish

The direct effect on fish is mortality resulting from toxic chemicals entering a stream or impoundment. The indirect effects include a decrease in carrying capacity for a stream or impoundment and a reduction in fish reproduction. These indirect effects result from the adverse effects on the habitat that influence food availability and spawning success. Refer to Water Quality for additional discussion of the effects on water quality and aquatic organisms.

Harvest rates for native brook trout may exceed desirable levels if access increases fishing pressure significantly.

Threatened, Endangered, and Species of Special Concern

The great blue heron, Cooper's hawk, red-shouldered hawk, northern goshawk, sharp-shinned hawk, common raven, and rattlesnake are Species of Special Concern in Pennsylvania that are most sensitive to minerals development. Road, pipeline, and well site construction during the breeding season is particularly disturbing to the avian species. Nest abandonment during incubation or when young are in the nest occurs when construction activities are near the nest. Rattlesnake mortality also increases since more development increases human encounters.

Trees containing nests of sensitive species and other immediate habitat for them can only be saved if the oil and gas operator is willing. Protection from disturbance during the breeding season is also only possible if the oil and gas operator is willing. The only means of completely protecting sensitive species is by purchase of the private oil and gas rights.

Recreation Opportunities

Oil and gas developments, with their associated road networks, are not legally open to recreation users, although their roads are often ungated and unsigned. The dense road network plus the high amount of large truck traffic and often rough condition of the road surface discourages and excludes recreation activities that may have taken place before mineral development.

If the area had few roads and provided a natural-appearing setting with a feeling of isolation, this opportunity is changed. Oil and gas developments provide a setting with a modified environment where human activities are readily apparent and no feeling of isolation exists. Activities such as fuelwood gathering and big-game hunting may increase, while others such as hiking, viewing scenery, camping, and fishing may decrease.

Experimental Forest and Research Natural Areas

Energy mineral development could affect these areas by altering the natural environment, which is the value of these areas for research. Any research studies in progress could be impacted by the removal or alteration of vegetation and other resources. Area providing baseline or validation data could be lost. In the future, research requiring these types of natural ecosystems may not be feasible.

Plans and Programs of Other Agencies

The level of private oil and gas development is assumed to be the same for all alternatives. Other agencies with responsibilities for regulating the oil/gas industry and enforcing environmental laws will have increasing workloads as more land is developed for oil/gas production. Road owners may have increased maintenance costs due to heavy truck traffic.

Local governments receive 25 percent of the receipts generated from payment of royalties on production of federally-owned oil and gas rights.

Private Property Rights

Activities associated with exploration and development of private oil and gas rights produce an economic return to the owner as well as the local economy. These financial returns from oil and gas production are the most direct benefit from ownership of the mineral estate.

Management Practice: Mineral Material Development

This practice is the location and extraction of common varieties of rock and stone used in the construction of roads, well sites, and campgrounds. When a rock source is located, timber and vegetation are cleared and an access road is constructed. Overlying soil is bulldozed aside to expose the rock which is extracted with heavy equipment, such as bulldozers or excavators. The stone is loaded into dump trucks and hauled to the construction site.

Currently, pits are considered exhausted when the material that is naturally fractured and readily excavated has been removed. The pit area contains additional material of suitable quality, but different extraction techniques would be needed to aid excavation.

Table 4-21 Volume of Mineral Materials Used by Forest Service and Oil/Gas Operators in Decade 1
(Thousand cubic yards)

Activity	Present Condition	Alternative A	B	C	D	(D2)	E
FS Usage (const., reconst., mtce.)	884	874	759	806	1027	(1053)	919
Oil/Gas usage (roads well locations, etc.)	3716	408	408	408	408	(4,084)	408
TOTAL	4600	1282	1167	1214	1435	(5,137)	1327

NOTE: For Alternatives A-E, oil/gas usage is that projected under the low demand scenario. The usage projected under the high demand scenario is displayed under (D2). Note that the oil/gas usage for the present condition is closer to the usage under the high demand scenario (D2) than under low.

Soils and Landform

Rock sources currently being used on the Forest are usually overlain by the most productive and versatile soil types on the Forest. Removal of the soil to excavate the rock irreversibly modifies the type of vegetation that can occupy the site after pit closure. The natural landform is permanently altered.

Energy Minerals

Surfacing of roads facilitates oil and gas production by (1) providing a longer period of time when the road is passable, (2) lowering development costs by providing reliable access for drilling and hydrofracturing equipment, and (3) reducing operating wear and tear on pumpers' vehicles. In areas of intensive development, a single rock source may be opened and exhausted before completion of the project. For smaller projects, the rock pit serves several oil and gas operators as well as Forest Service projects. The availability of rock for surfacing oil and gas lease roads impacts the financial investment required in mineral development activities.

As this non-renewable resource is depleted through use for Forest Service and oil and gas projects, oil and gas production costs rise. Rising costs economically inhibit some exploration and production activities in unproven areas. See also the discussion of effects on mineral materials of timber sale roads under the Timber Problem Statement (Page 4-34).

Mineral Materials

Excavation and use of naturally fractured sandstone bedrock reduces the total supply of the resource. Historically, those sources that were easily excavated and within the shortest haul distance to the project site were depleted first. As these readily accessible rock sources are exhausted on the Forest, different techniques will be necessary to obtain construction materials. Deeper, less weathered rock can be extracted by blasting and then reduced to the required size in a crusher. Such operations will probably occur on fewer, larger sites compared to the many small pits now in use on the Forest.

Noise

Truck traffic, excavation, blasting, and crushing create high intensity noise in the local area of a rock pit. This type of noise will be intermittent but of long duration at sites scattered across the Forest. Sites will change as old pits are closed and new pits are opened. Wildlife and recreation users desiring a quiet environment will be displaced. Noise from pits adjacent to wilderness areas will adversely affect opportunities for solitude.

Roads

The use of rock as road surfacing reduces the adverse effects of roads on other resources. Surfaced roads have a longer season of use and lower user costs than unsurfaced roads. The longer season of use increases opportunities for management of other resources and provides greater flexibility in scheduling activities. Construction costs are dependent on the haul distance from the pit, the total amount of construction, and the volume of rock needed.

Recreation Opportunities

Rock and gravel used for camping sites and tent pads in developed campgrounds provides a level, well-drained site with an extended use period and lower maintenance costs. Gravel pits which are located along roads open to the public are also frequently used for dispersed camping. Some types of recreation use, such as hiking and nature photography, may be displaced both during and after pit operation and after pit closure. The displacement is due to noise and the adverse impacts to the visual environment from vegetation changes and landform alteration.

Private Property Rights

Development of mineral material sources on National Forest land impacts private property rights by providing the surfacing material for oil and gas developments. Extraction of rock from a local source reduces the haul distance for the operators. The shorter the haul distance, the greater the savings in road costs.

PROBLEM 6: WILDERNESS

As defined by the Wilderness Act of 1964, a wilderness is an "area of undeveloped Federal land retaining its primeval character and influence . . . which is protected and managed so as to preserve its natural conditions." Wilderness areas provide opportunities for solitude and primitive recreation in a natural ecosystem. Management direction for the Hickory Creek and Allegheny Islands Wilderness is contained in the Forest Plan Standards and Guidelines for Management Area 5.

Management Practice: Wilderness Management

Management activities may include regulating party sizes, issuing permits for use, designating camping areas to minimize resource impacts, constructing trails, enforcing regulations, information and education services, restoration, and site hardening.

Table 4-22 Area Designated as Wilderness
(Thousand Acres)

	Alternative					
	A	B	C	D	(D2)	E
Wilderness	10	10	10	10	(10)	10

Environmental Consequences: Wilderness

Energy Minerals

Federally owned minerals in Wilderness areas have been Congressionally withdrawn from leasing consideration. Congress directed the Forest Service to acquire approximately 10,000 acres of private mineral rights beneath the Wilderness Areas on a willing-seller basis. Currently 80 percent of these rights have been acquired and are now federally owned. The Nation will forego production of federally owned oil and gas reserves in the Wilderness Areas.

Privately owned minerals that are not acquired by the U.S. Government can be developed by the owners. Such development will cause a loss of wilderness values, such as solitude, undisturbed landscape, and natural vegetation in the developed area.

Mineral Materials

Rock sources will not be developed in Wilderness areas. Withdrawal of the mineral material resource reduces the land base available for exploration and development of rock sources by two percent.

Visual Resources

The young, even-aged forest existing today will gradually change to a mature, old-growth forest over the next 100 to 200 years. In the foreground, the old-growth forest will take on a more uneven-aged character as larger trees die from wind, insects, disease, fire, or old age and are replaced by small groups of young trees. Except for occasional catastrophic natural occurences, such as widespread insect and disease epidemics or blowdowns, the forest canopy will appear unbroken. These changes will occur gradually over several centuries and will not be apparent to observers from decade to decade.

Water Quality

Effects of wilderness designation on water quality will depend on how much of a stream's watershed is within the wilderness area and how much disturbance occurs on private surface or from development of private subsurface ownership within a stream's watershed. Where a watershed is entirely within the wilderness area and

surface and subsurface ownership is Federal, water Federal, water quality of the stream will be affected primarily by natural events, such as channel cutting and tree windthrow. If part of the stream's watershed is subject to management activities because it is outside the wilderness or in private subsurface ownership, water quality of the stream may be impacted by those activities. The degree of impact will depend on (1) the type of activity, (2) the amount of watershed area affected by the activity, (3) the location of the activity in relation to the stream, and (4) what kind of mitigation measures are used.

Vegetation

Vegetative cover in the Hickory Creek Wilderness Area will eventually resemble the forest that existed on the Allegheny Plateau in pre-settlement times. Natural processes operating over the next century or two will establish and maintain a forest of mature and overmature trees of very large size. Disturbances such as fires and windthrow will create some vegetative diversity represented by stands in various stages of recovery from these natural catastrophes.

Shade-tolerant hemlock and beech will likely be the most common species in the old-growth forest, as they are probably the true climax type on the Allegheny Plateau. Sugar maple, a minor species of the hemlock-beech forest type, may replace hemlock as a major component in some places. See also the discussion of wilderness effects on Visual Resources (Page 4-58).

Vegetation on the wilderness islands in the Allegheny River will tend to maintain its current condition and composition. Less shade tolerant species, such as aspen, sycamore, cottonwood, butternut, willow, and alder, will predominate the lightly stocked overstory. Various types of fern and grass, mixed with goldenrod, dominate the ground vegetation. High water due to seasonal conditions and discharge from Kinzua Reservoir will tend to restrain island vegetative development to early successional stages of flood-tolerant species.

Wildlife

The wilderness designation would not have an immediate effect on the wildlife species presently found in the

Wilderness Areas. Over a period of 150 to 200 years, natural vegetative succession would favor wildlife species normally associated with old-growth timbered habitats. Den trees and snags would increase over time because of natural senescence of the trees. The increase in den trees and snags would benefit cavity nesting birds and mammals, including the pileated woodpecker, gray squirrel, and other species associated with old-growth forests. Horizontal diversity would decrease, with a resulting decrease in habitat capability for wildlife species associated with early successional vegetation. The white-tailed deer and ruffed grouse populations would decline over time from present levels as natural succession of the brush-stage vegetation on the area eventually converts to timbered stands. In general, species that require a variety of habitats during the course of their yearly cycle would decline.

Recreation Opportunities

Wilderness Areas provide opportunities for recreation in a setting that is non-motorized, isolated, close to nature, and with some challenge and risk.

Plans and Programs of Other Agencies

Revenues from timber harvesting, leasing of Federal minerals, and special use permits would not be produced from wilderness areas. These foregone revenues from Wilderness Areas would result in lower payments to local governments, which receive 25 percent of all such revenues produced on the National Forest.

D. CUMULATIVE EFFECTS OF ALTERNATIVES

In this section, the cumulative effects of alternatives are described for each element of the environment. The cumulative effect of an alternative is a result of the application of all management practices needed to provide the outputs and benefits of that alternative. For example, the practices of even-aged silviculture, road construction, herbicide treatment, wildlife habitat improvement, and wilderness management all have significant effects on the visual resource. Each alternative requires a unique mix of these practices to provide the alternative's response to the management problems. Therefore, the cumulative effect of each alternative on visual quality will be unique.

In assessing the cumulative effects of an alternative, resource specialists considered the quantity of each practice, where the practices would be applied, and over what time frame. They then evaluated the magnitude of the qualitative direct and indirect effects, as described in the preceding section. The evaluations of all practices were integrated for each alternative to provide a comprehensive view of how a particular alternative would change the existing condition of each environmental element.

The discussions of environmental elements follows the sequence of elements shown in Table 4-2. Outputs and quantities of practices can be found in the description of each practice in Section C. In the discussions of elements that follow, a summary of the significant effects of practices is accompanied by some tabular and graphic presentations of outputs and other effects. Narratives describe the cumulative effects of each alternative on the existing condition of the environmental elements. (See Chapter 3 for descriptions of the existing condition of affected elements.)

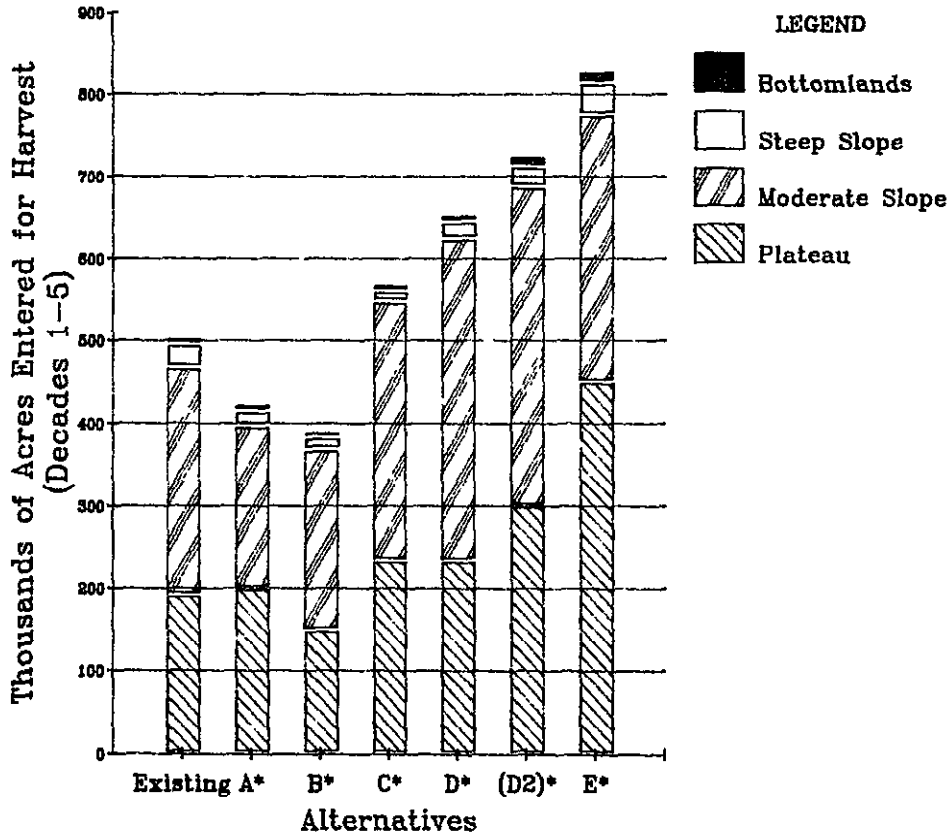
The discussion of environmental effects from any alternative is based on the outputs and benefits generated by that alternative under a low level of oil and gas demand. Following the discussions of the individual alternatives, the results of modeling a high level of oil and gas demand on the preferred alternative are discussed. The outputs and benefits generated by this variation of the preferred alternative, D2, also provide the basis for estimating the effects of high oil and gas demand on Alternatives A, B, C, and E. See Management Practice: Energy Minerals Development in Section C (Page 4-47) for more information on oil/gas demand scenarios.

SOILS

Cumulative effects on soils are primarily a result of management practices that physically disturb the soil, and alter the landform, such as timber harvesting, road construction, oil and gas development, and mining of mineral material for road construction.

The effects of these practices on soil, such as accelerated erosion, soil compaction, removal of soil from vegetation production, cumulatively decrease soil productivity. Figure 4-6 displays the area in each alternative that would be entered for timber harvesting in decades 1 through 5. Timber management occurring on each of the four landtype groups is also indicated, which is related to the potential for erosion and compaction, and to the ease of mitigating adverse effects.

FIGURE 4-6
Total Area Entered for Timber Harvest



* Some acres are entered more than once during the 50 year period

FIGURE 4–7
Soil Compaction Area

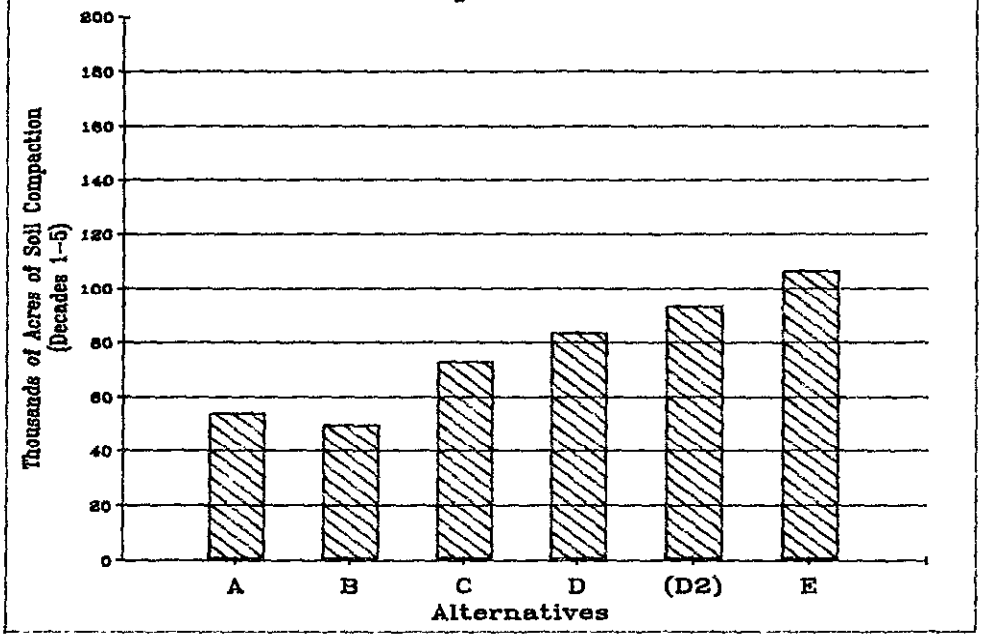
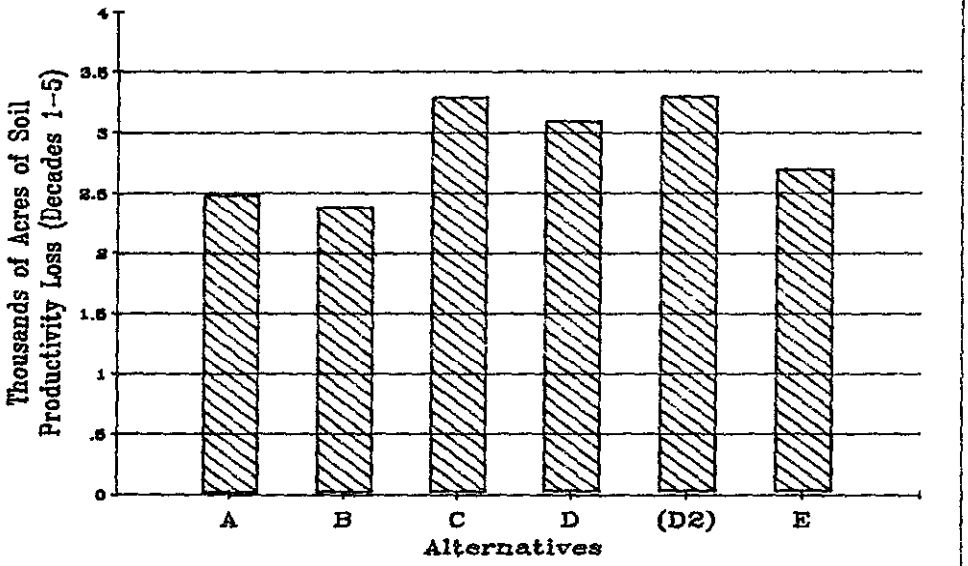


FIGURE 4–8
Soil Productivity Loss Through
Forest Service Activities*



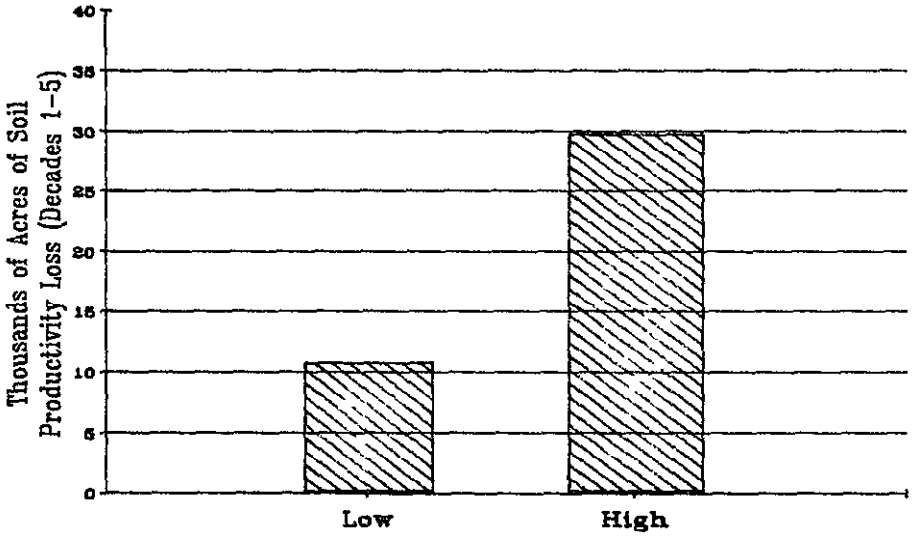
*Includes area occupied by new roads and stone pits

Figure 4-7 displays the area in each alternative that would be subject to soil compaction on skid trails and landings used for timber harvesting over the first five decades. The reduction in tree growth due to compaction may last for 15 years.

Soil productivity loss on the area occupied by Forest Service roads and stone pits over the next 50 years is displayed in Figure 4-8. Soil productivity is foregone over the long term on land dedicated to these uses.

The area occupied by oil and gas developments would be the same for all alternatives. Figure 4-9 displays soil productivity loss on the area in roads, well sites, and other facilities needed for oil and gas extraction over the next 50 years under both the low and high demand scenarios. Because the effects of energy mineral development are the same for all alternatives, they will be discussed only once after the discussions by alternative.

FIGURE 4-9
Soil Productivity Loss Through
Private Oil/Gas Developments*



*Includes area occupied by new roads, well sites, and stone pits.

Alternative A

Alternative A is second to Alternative B in fewest adverse effects on soil.

Compared to Alternative B, the potential for soil disturbance from timber management is higher. The area entered for management is larger, with more plateau and bottomland landtypes entered. Equipment use on these landtypes generally results in more compaction than on the slope landtypes. Alternative A has a higher potential for erosion from harvesting on steep slopes than Alternative B.

Under Alternative A, a slightly larger area would be removed from vegetative production due to roads and pits than under Alternative B. This loss of productive soil would be less than under Alternatives C, D, or E.

Alternative B

Alternative B would cause the least impact on soils of all alternatives.

Under Alternative B, the fewest acres would be entered for timber management, particularly on the plateau landtype, with consequently the least soil compaction. However, with more activity on moderate slopes and more final harvesting than Alternative A, the potential for soil displacement and erosion is higher under Alternative B.

A slightly smaller area would be removed from vegetation production due to roads and pits compared to Alternative A.

Alternative C

Alternative C would have fewer impacts on soils than Alternatives D and E, but greater impacts than Alternatives A and B.

Alternative C has the third largest area entered for timber harvest. This alternative has the largest final harvest cut for the first two decades, with consequently more potential for soil displacement and acccelerated erosion than Alternatives A and B. It also has more timber harvest on plateau and moderate slope landtypes than do Alternatives A and B.

This alternative has the most area removed from vegetation production due to road construction and stone pits.

Alternative D

Alternative D would have the second greatest impact on soils, after Alternative E.

Alternative D has the largest area entered for timber harvest, resulting from the additional entries made to thin stands before final harvests. This alternative has the most area of moderate slope landtype and the second highest amount of plateau landtype being managed for timber. Consequently, soil displacement, compaction, and erosion would be second only to Alternative E.

Under Alternative D, the second largest area would be removed from production due to road construction and stone pits.

Alternative E

Alternative E would cause the greatest impact on soils of all alternatives.

Under Alternative E, multiple entries over a short period of time would be made into timber stands under the high level of uneven-aged silviculture being practiced. This alternative has the most entries on the plateau landtype of all alternatives. Steep slopes and bottomlands would be as intensively managed as moderate slopes and plateau landtypes. Under these circumstances, a high potential exists for soil compaction, soil displacement, accelerated erosion, excessive numbers of skid trails on poorly drained soils, and equipment operation difficulties on steep slopes and some moderate slopes.

Alternative E had the third highest impact on soil productivity and loss of land form due to road construction and stone pit development.

Effects of High Oil and Gas Demand on the Alternatives

The high demand variation of Alternative D, displayed as D2, would result in a slightly higher level of timber harvest and construction of Forest Service roads. However, the impact of this increased activity is overshadowed by the loss of soil productivity due to clearing for well sites, roads, and other facilities. Over a 50-year period, the area in existing and new developments would be three times larger under the high demand scenario compared to the low demand scenario.

These effects on the soil resource would also occur if the high demand level of oil and gas development occurred under any of the other four alternatives.

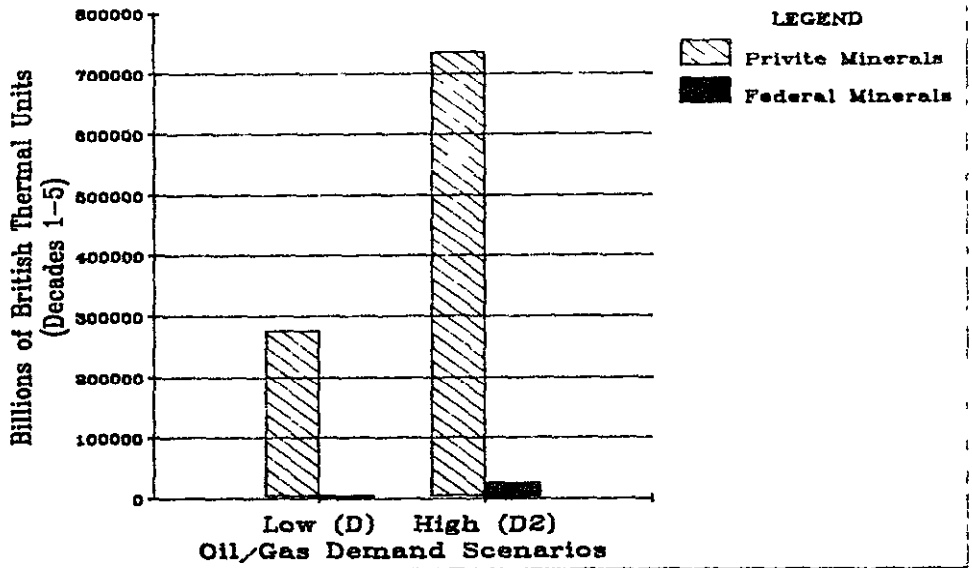
ENERGY MINERALS

Cumulative effects of each alternative on the energy mineral resource are the result of the following factors: 1) energy mineral development, and 2) the acreage of Federal minerals withdrawn from mineral production. Since the amounts of these are the same in each alternative, the cumulative effect is the same.

Alternatives A, B, C, D, and E

Energy mineral development impacts the mineral resource by reducing the known reserves through extraction. The volume of oil and gas extracted through exercise of private rights and development of Federally owned oil and gas is measured in billions of BTU's (Figure 4-10). Depletion of some reservoirs is expected within the first two decades. Discovery and exploitation of new oil/gas reservoirs is likely to occur as the old reservoirs are explored.

FIGURE 4-10
Energy Production Under Low and High Oil/Gas Demand Scenarios



Acreage withdrawn from mineral entry directly affects the maximum production potential of the energy mineral resource. The current Federal subsurface ownership is 29,659 acres. Approximately 40 percent of this has been withdrawn from mineral entry in each alternative (see Table 4-23). Almost all of the 40 percent is a result of the Pennsylvania Wilderness Act. The Act authorized the subsurface rights in Hickory Creek Wilderness to be purchased and withdrawn from mineral entry. To date, 80 percent of the Wilderness acreage has been purchased and withdrawn. Within the National Recreation Area, Congress also directed that existing Federal minerals be withdrawn from exploration and development but did not authorize any further acquisition.

Table 4-23 Federal Subsurface Withdrawn from Exploration and Development (acres)

Federal Subsurface Withdrawn	Acres
Withdrawn	11,658
Wilderness	(7,638)
NRA	(3,930)
Other (towns, etc.)	(90)
Not Withdrawn	18,001
TOTAL Federal Subsurface Ownership	29,659

Mineral material development may also affect the maximum production potential of energy minerals if economic rock resources are not available or are used for other resource production. The volume of rock used for Forest Service roads, etc., is a measure of this potential effect. This factor is compared by alternative in the Mineral Material discussion.

Effects of High Oil and Gas Demand on the Alternatives

The effects on the energy resource under the high demand scenario are a result of the increased production on the resource. Other effects of roads and rock consumption are described in the selection below on the Mineral Material resource.

The high oil/gas demand scenario is a variation of Alternative D, and is represented by D2. In this variation, the projected energy production would be two and one half times the rate under the low demand scenario (Figure 4-10). This increase results from the greater number of active wells.

Cumulative Effects: Energy Minerals

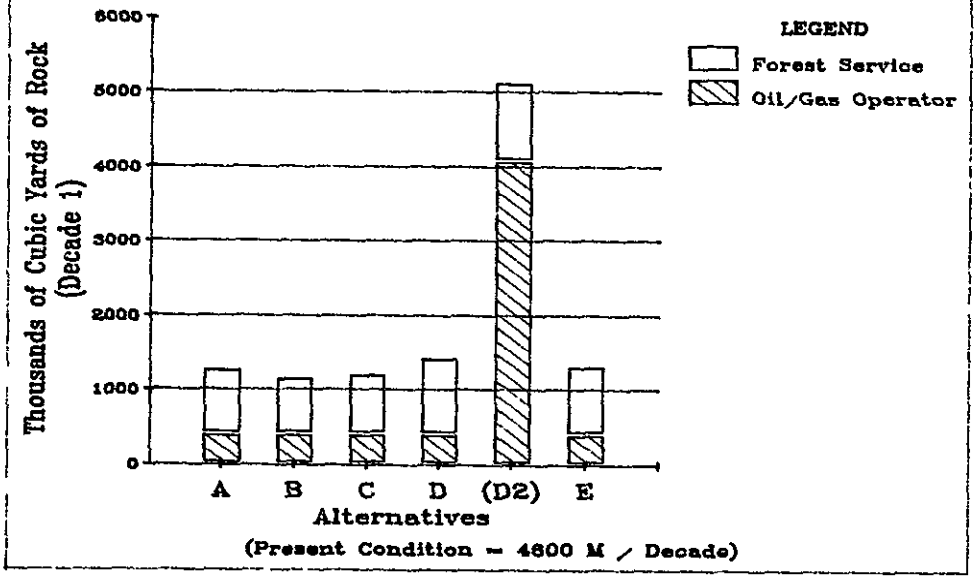
MINERAL MATERIALS

Cumulative effects on the mineral material resource are the result of the following practices: 1) energy mineral development, 2) the acreage withdrawn from mineral material development, 3) mineral material development, and 4) miles of National Forest roads constructed.

The total amount of mineral material used as shown in Figure 4-11 does vary by alternative. Energy mineral development impacts the mineral material resource since rock is used for roads and well locations. The acreage withdrawn from mineral material entry is the same for all alternatives. Ten thousand acres in the Wilderness have been Congressionally withdrawn from rock pit exploration and development through the Pennsylvania Wilderness Act. Although the volume of material present on the Forest has not been affected, production from this 10,000 acres is foregone. An additional withdrawal of 23,000 acres occurs in the National Recreation Area. This withdrawal from mineral material development is intended to maintain the primitive character of the Area. Effects of the withdrawal will be similar to those in the Wilderness areas. The total 33,000 acre withdrawn from mineral material development in these areas is approximately 6.5 percent of the Forest's total acreage. The miles of National Forest roads constructed on the Forest impacts the rock resource since native rock is used to surface roads. Since the oil and gas use is constant across Alternatives A, B, C, D, and E, the variance is caused by the Forest Service use. D2 is a variation of D which displays the high oil and gas demand scenario. It is discussed at the end of this section.

The cumulative effect of the above practices on the mineral material resource can be measured by the total amount of mineral material used and the acreage withdrawn from mineral entry. The latter does not vary across alternatives.

FIGURE 4—11
Mineral Material Consumption
Forest Service and Oil/Gas Operators



Alternative A

Alternative A ranks second lowest in the volume of rock consumed for National Forest roads and oil/gas projects. This consumption is 5 percent higher than the volume used in Alternative B. This relatively low Forest Service volume consumed would provide a greater availability of rock for oil/gas use.

Alternative B

Alternative B ranks lowest in the volume of rock used in the first five decades, 11 percent lower than in Alternative D.

Alternative C

Alternative C has the second highest volume of rock consumed for Forest Service use. The difference in rock usage between Alternative C and Alternative D, which has the highest consumption, is one percent.

Alternative D

The volume of rock used in Alternative D is the highest, one percent higher than the volume used in Alternative C, and 11 percent higher than Alternative B, with the lowest usage. This alternative has the highest consumption of rock because of road maintenance activities, rather than new road construction.

Alternative E

Alternative E utilizes more rock than Alternatives A and B, but less than the volume used in Alternatives C and D.

Effect of High Oil and Gas Demand on the Alternatives

The high oil/gas demand scenario is a variation of Alternative D, and is represented by D2. In this variation of Alternative D, the effect on the mineral material resource is a direct result of the increased consumption necessary for oil/gas production activities. The projected increase in usage for Forest Service Service projects is five percent higher than in Alternative D. For oil and gas development, the projected increase is ten times the volume under the low demand scenario. The total increase in rock consumption in D2 is two and one half times the volume of Alternative D.

Because of the already high use of rock occurring in Alternative D, this increased consumption in D2 would accelerate the depletion of known sources. This accelerated depletion may require extraction techniques not currently used in order to remove a greater volume of material from one location. Techniques used may include drilling and blasting the rock formations, followed by crushing to reduce the size.

Alternatives A and B, with lower consumption rates than Alternatives C and D, would have more rock material available for high intensity oil and gas activities. The volume available may still not be in sufficient quantities to meet the demand for road surfacing material. The extraction techniques discussed under D2 are expected for any of the alternatives.

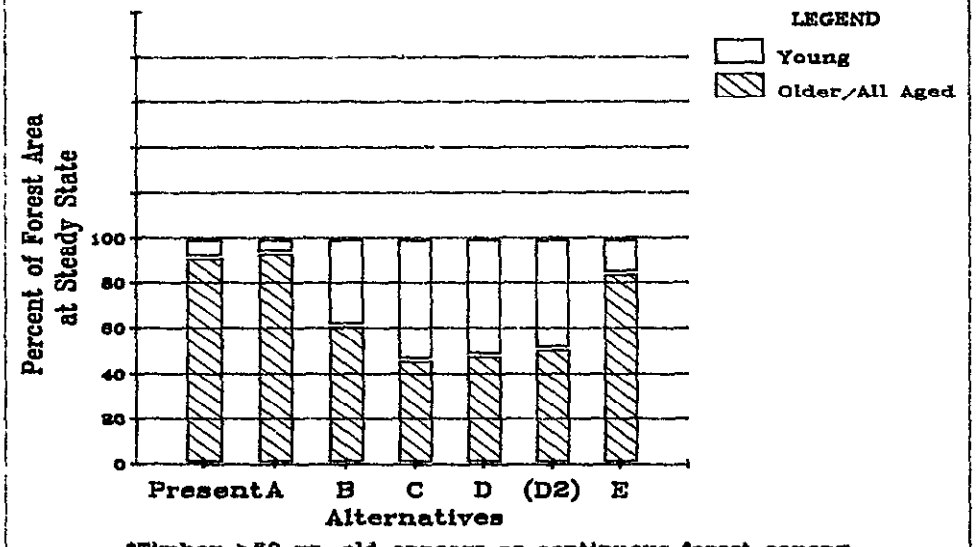
VISUAL RESOURCE

The effects of any one alternative on the visual resource are an accumulation of the effects of all management practices over time. These management practices are

even-aged silviculture, road building, herbicide treatment, wildlife habitat improvement, energy mineral development, and wilderness management. To indicate the cumulative effects for the visual resource three characteristics are displayed: 1) timber age distribution at a steady state in Decade 15 (Figure 4-12), 2) total miles of high standard roads, Traffic Service Levels A, B, and C in place at the end of the planning horizon (Table 4-24), and 3) the amount of old growth at steady state condition in Decade 15 (Figure 4-13). These characteristics, relating to the overall vegetative pattern, have the greatest influence on the visual character of the landscape.

How these characteristics are actually perceived is greatly dependent on the size, shape, location, and spatial distribution of them in relation to the observer. The following comparisons assume that as the percent of younger stands and miles of road increase the more likely these changes will be apparent in the landscape as seen from the current forest travelways and use areas.

FIGURE 4-12
Distribution of Forest Timber in Young(<50 yr.) and Older (>50 yr.)* Ages



*Timber >50 yr. old appears as continuous forest canopy.

FIGURE 4—13
Percent of Area in Old Growth Timber

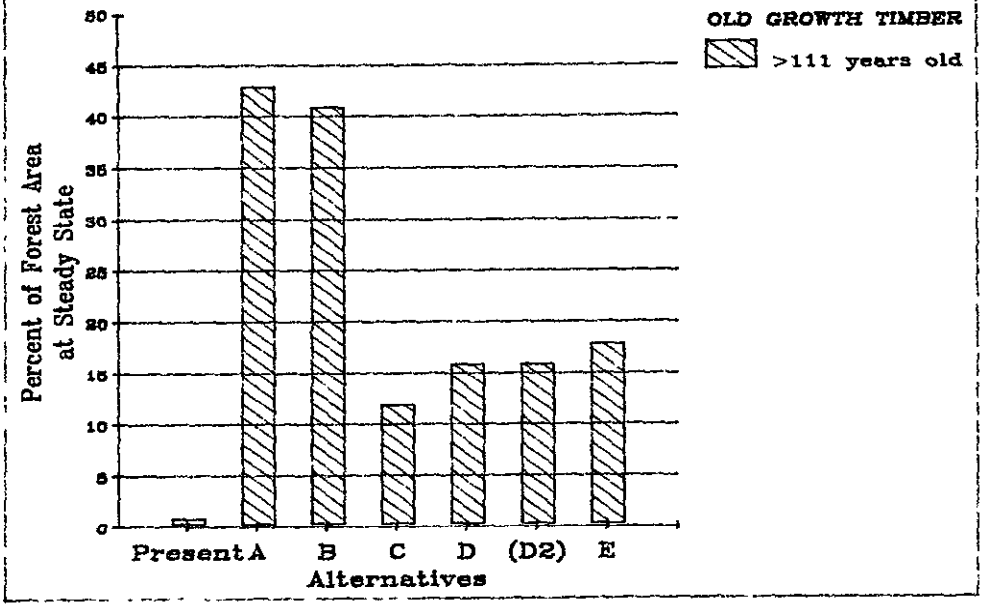


Table 4-24 High Standard Forest Service Roads Constructed By the Time The Forest Reaches the Steady State Condition

	Present	Alternative					
	Condition	A	B	C	D	D2	E
Miles of Road	898	123	70	133	66	66	241

Alternative A

Alternative A would be similar to the present condition, with most of the forest having a continuous canopy of dense hardwoods. Alternative A ranks the highest in the amount of older-aged forest, with Alternative E running a close second. Although Alternative A would not cause significant change from the landscape character of a continuous forest canopy, the character within this forest canopy would

change, as 43 percent of the forest grows to biological maturity and beyond compared to the present one percent. Yet this change to an old-growth, big tree forest would take place so slowly over such a long period of time, that it would not be evident to most visitors.

Construction of high standard roads under Alternative A would result in a 12 percent increase in roads, compared to the present condition. This moderate increase would be only occasionally evident to forest visitors.

If Alternative A were fully implemented, the average forest visitor would not see a significant change in the continuous canopy of dense hardwoods. The visual quality of the landscape would retain its natural-appearing character. Changes in the vegetative composition would be very slow. The visual variety of the landscape would remain rather low as 93 percent of the forest would be mature or uneven-aged Northern hardwoods. The visual resource would be somewhat monotonous with little variety in the age, size, texture, or color of the vegetation.

Alternative B

Implementation of Alternative B would result in a moderate change from the existing condition of the visual resource. The amount of vegetation 50 years and older would decrease from 91 to 61 percent by Decade 15. The remainder of the forest would be in the 0-50 year age class, which would provide some visual contrast with the older-aged vegetation. The increase in the amount of younger-aged forest is from 9 percent presently to 39 percent under Alternative B by Decade 15. This change would begin to occur quickly and would be evident in the first 20 to 30 years of plan implementation. As with Alternative A, a significant portion of the forest, approximately 41 percent at the end of the planning horizon, would reach biological maturity or older. The change from the current one percent in old-growth forest would occur so gradually that most visitors would not be aware of it.

Alternative B ranks second lowest after Alternative D in the construction of high standard roads, with six percent more road construction than Alternative D. Compared to the present condition, the increase would not be evident in the overall forest landscape.

If Alternative B were implemented, the forest visitor would see changes taking place in the present continuous forest canopy of dense hardwoods. In some locations, change in the canopy would be relatively frequent as regeneration cuts are made. Visual variety would increase compared to the present condition. In the locations where timber management is practiced, a variety of ages, sizes, textures, and colors would be evident. However, two-thirds of the forest area would still have a natural-appearing landscape.

Alternative C

Alternative C would cause the greatest change from the present condition of the visual resource. The area in continuous canopy of dense hardwoods would decrease from 91 to 46 percent. Compared to the other alternatives, this alternative would have the least amount of area in biologically mature or older timber. Most of the forest area would be under timber management. Compared to the present condition, Alternative C would have six times the area in the 0-50 year-old age class by Decade 15, or 54 percent of the total forest. This change in age class structure would occur in the first two to three decades. Visual contrasts in vegetation would be evident throughout much of the forest landscape.

Alternative C has the second highest need for construction of high standard roads of all the alternatives. This amount of road building would increase the amount of road corridors by 15 percent, compared to the present condition. This increase would be occasionally evident to the forest visitor.

The forest visitor would see over one-half of the forest landscape modified by activities resulting from timber management. These modifications or visual contrasts would change location relatively frequently due to the shorter cutting cycles emphasized in this alternative compared to the long rotations in Alternatives A and E. People's activities and their effects would tend to dominate the overall landscape more in this alternative than in the other alternatives. The visual variety of Alternative C would increase greatly compared to the existing condition. Over one-half of the forest landscape would be a mosaic of different patterns, textures, and colors.

Alternative D

Changes in the visual resource under Alternative D would be greater than the moderate changes under Alternative B and similar to the changes under Alternative C. About 48 percent of the forest area would have older-aged vegetation in Decade 15, which would appear as a continuous forest canopy of dense hardwoods, compared to the existing condition where 91 percent of the Forest would be older than 50 years. The remaining 52 percent of the forest area would be in the 0-50 year class, which would result in visual contrasts with the surrounding older-aged vegetation. These changes would be evident within the first 20 to 30 years of Plan implementation. About 16 percent of the forest would have biologically mature or older timber. The visual change from the present one percent of the area in old-growth is substantial but would occur so gradually that it would not be evident to most visitors.

Construction of high standard roads in Alternative D is the lowest of all alternatives and would have only a minor effect on the present condition. Alternative D would have the fewest open corridors through the forest canopy.

If Alternative D were implemented, about 52 percent of the canopy would appear modified by timber management activities. These changes in the visual scene would take place frequently, but would be less widespread than under Alternative C. A few large areas comprising one-quarter of the forest would remain in a virtually continuous forest canopy. Visual variety in Alternative D would increase compared to the present condition. Approximately half of the forest would be a mosaic of patterns, textures, and colors, compared to 9 percent under present conditions.

Alternative E

Under Alternative E, 84 percent of the Allegheny National Forest would have a continuous forest canopy. This area is slightly smaller than under the present condition.

In Alternative E, 35 percent of the forest would be managed with uneven-aged silviculture compared to 21 percent in Alternative A. Alternative E would have approximately half of the area in old-growth timber that Alternative A has.

Alternative E has the highest level of high standard roads, due to the emphasis placed on uneven-aged timber management. This amount of road building would increase road corridors by 25 percent compared to the present condition. This change would be evident to the forest visitor.

If Alternative E were fully implemented, the forest visitor would not see substantial change from the current continuous forest canopy. The visual quality would retain a natural-appearing character and changes in the vegetative composition would be slow. Visitors would see management activities and temporary disturbances under the canopy on 80 percent of the forest. The visual variety, although slightly increased compared to the present condition, would still be low with little variety in pattern, texture, or color.

Effects of High Oil and Gas Development

When a high rate of oil and gas development was applied to Alternative D, the changes in the visual resource effects from Forest Service management activities were not significant. In D2 there was only a three percent shift to older vegetation while the old-growth acreage and miles of road construction remained the same. However, the visual impacts of oil and gas development itself are significant.

Because of the high density of roads, pipeline right-of-ways, well sites, and tank batteries, the continuous forest canopy may appear significantly modified in areas intensely developed for oil and gas. The cumulative effects of private development can be measured by estimating the acres potentially impacted by high intensity oil and gas development. Based on the Forest's demand estimates, new oil and gas development would peak about the third decade, then slowly decline. By the third decade, Alternative D at a low rate of development shows nearly 10 percent of the Forest impacted, which is about the same as presently exists. At a high rate of development (D2), over 25 percent of the Forest could be impacted by the third decade. These estimates assume some development will be phased out over time and revert back to natural forest.

Because Forest Service management actions have little effect on the oil and gas market, the rate of development is expected to be the same for all alternatives. The effects of development on the visual resource are also expected to

be similar across all alternatives. However, in Alternatives A and E, the visual changes may be more evident because a higher percentage of the forest is continuous canopy. By contrast, in Alternatives C and D, nearly one-half of the Forest is already in broken canopy so the additional impacts of oil and gas development may not be as evident.

CULTURAL RESOURCES

Cultural resources would be protected in all alternatives. Prior to earth-disturbing activities, a survey is made to locate and recommend protection measures for any prehistorical or historical sites or artifacts in the area. In addition to protecting cultural resources, such surveys also add to the understanding of past ways of life in this part of Pennsylvania.

Alternatives which require a high amount of surface-disturbing practices, such as timber harvesting and road construction, will generally have more cultural resource surveys than alternatives with low levels of such activities. In descending order of potential contributions to archaeological and historical information, the alternatives are ranked: Alternative E, Alternative C, Alternative D, Alternative A, and Alternative B.

WATER QUALITY

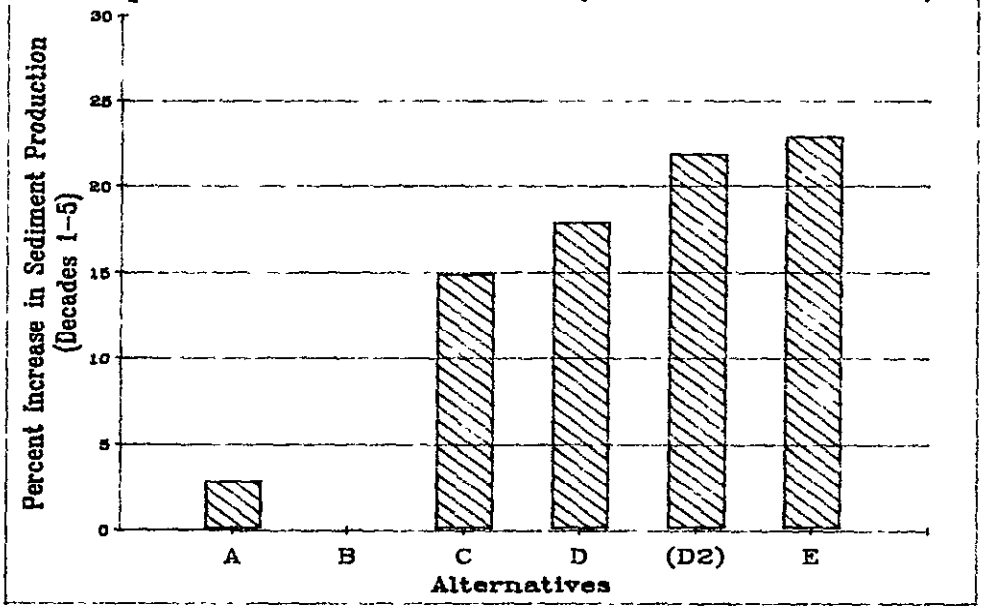
Water quality is significantly affected by timber management, road construction and use, the extraction of oil and gas, and by establishment of wilderness areas. For all alternatives, effects from oil and gas development and from wilderness are the same and will, therefore, be discussed only once. The intensities of timber management and road construction vary between alternatives; therefore, effects from these activities will be compared among the alternatives.

Accurate prediction of erosion and stream sedimentation from temporary facilities, such as landings and skid trails, and from permanent facilities, such as roads for forest management and roads and well sites for oil and gas development, is very difficult. However, estimating sediment production and making relative comparisons among the alternatives and with other land uses provides a useful perspective for assessing the alternatives' effects on water quality, and for assessing the effects of different levels of oil and gas development.

Erosion from short-term and long-term facilities was estimated using measured erosion rates from forest roads in West Virginia. Ten percent of the area managed for timber in any alternative was assumed to be occupied by short-term facilities. Short-term facilities were assumed to erode and produce sediment for one year. Long-term facilities (permanent roads and oil and gas production facilities) were assumed to erode both during construction and chronically over the lifetime of the road or facility.

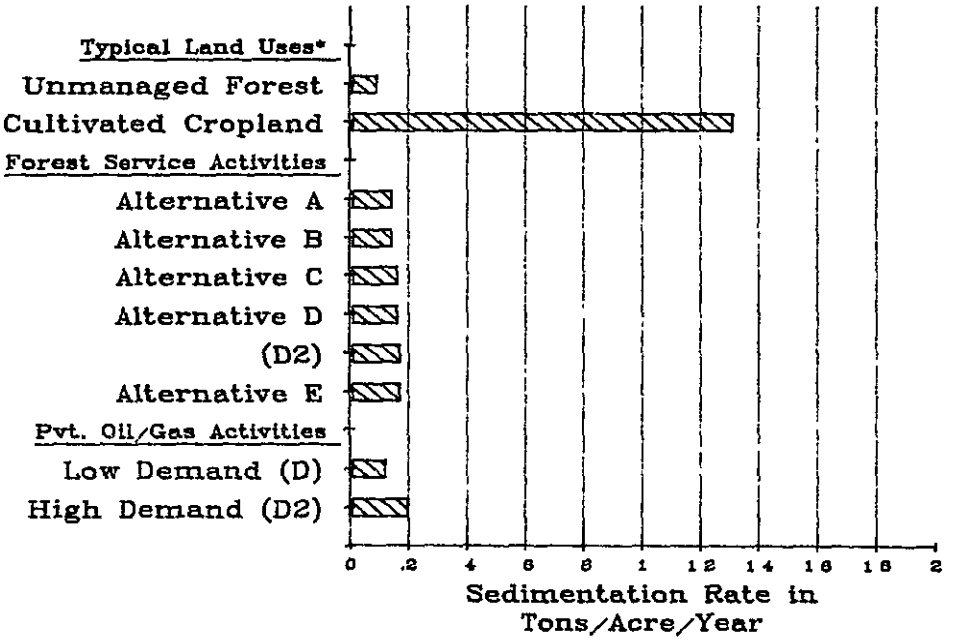
Sedimentation of streams was estimated using published relationships between watershed size and sediment delivery rates. For each alternative, the estimate of sediment production from both short-term and long-term facilities and from natural background sources was compared to that of Alternative B, which is projected to produce the least amount of sediment over the next 50 years. These percentage increases in sediment production are displayed in Figure 4-14.

FIGURE 4-14
Increase in Sediment Production Compared to Alternative B (Current Situation)



To provide perspective on these estimates of sediment production, the average annual sedimentation rate from National Forest land, including both sediment from natural background production and from management activities, is compared in Figure 4-15 to the average annual rate of sedimentation from other land uses. The sedimentation rate for unmanaged forest land is for the eastern United States. The sedimentation rates for the other types of land management displayed in Figure 4-15 are derived from erosion rates for the Major Land Resource Area which includes the Allegheny National Forest, as estimated by USDA Soil Conservation Service.

FIGURE 4-15
Annual Sedimentation Rate Comparisons



*Land uses such as mines and quarries rate 20 1 tons/acre/year

Alternative A

Alternative A is very similar to Alternative B in its effects on water quality, with sediment production being only three percent higher than under Alternative B. The sedimentation rate under this alternative is 50 percent higher than the sedimentation rate from unmanaged forested land, but only 11 percent of the rate projected from cropland.

Alternative B

Sediment production from forest management is the lowest under this alternative. The rate of sediment production is 50 percent higher than from unmanaged forest land, but is only 11 percent of the sedimentation rate from cropland.

Alternative C

Under this alternative, 15 percent more sediment would be produced than under Alternative B. Compared to unmanaged forest land, the sedimentation rate is 70 percent higher, but is only 13 percent of the sedimentation rate from cropland.

Alternative D

Eighteen percent more sediment would be generated from forest management activities under this alternative than under Alternative B. Like Alternative C, the sedimentation rate is 70 percent higher than from unmanaged forest land, but is only 13 percent of the sediment production from cropland.

Alternative E

This alternative has the highest production of sediment, being 23 percent higher than Alternative B. The sedimentation rate is 80 percent higher than the rate from unmanaged forest land, and 14 percent of the rate from cropland.

Effects of High Oil and Gas Demand on Alternatives

Sediment production from forest management activities would increase if the high demand scenario of oil and gas development occurred. The high demand variation of the preferred alternative (D2) produces 22 percent more sediment compared to Alternative B, while the preferred alternative under the low demand scenario (Alternative D) produces only 18 percent more sediment compared to Alternative B. The rate of sediment production from the National Forest due to forest management activities is also higher under the high demand scenario, being 10 percent higher than the rate under the low demand scenario. Similar increases in sediment generated from forest management activities would be expected under any of the other alternatives, if the high demand level of oil and gas development occurred.

Under all alternatives, sediment generated from oil and gas development under the high demand scenario would be more than three times that produced under the low demand scenario. Production of wastewaters, including production brines, and the level of oil spills would also be expected to increase proportionately if a high rather than low level of oil and gas development occurs.

Wilderness

Under all alternatives, the same wilderness areas would be provided. In the Hickory Creek Wilderness Area, 68 percent of the watersheds of streams that flow through the Area are within the Wilderness boundary. In addition, the federal government has acquired 80 percent of the subsurface rights and is currently negotiating to acquire the remaining 20 percent. Within the Wilderness, water quality of streams would be affected primarily by natural phenomena. Activities occurring on the 32 percent of the watersheds outside the area have the potential to affect water quality within the Wilderness.

NOISE

Management practices which produce noise include timber harvest, road construction and use, developed recreation sites, motorized trail use, and oil, gas, and minerals development. The level, quality, spatial, and temporal characteristics of noise, as described in Section C, are indicated by the amount of noise-producing practices occurring in each alternative.

Alternative A

Alternative A generates the least noise of all the alternatives considered. Under this alternative, large areas would be assigned to Management Area 6 where recreation and wildlife objectives are emphasized. As a result, noise levels for dispersed recreation would be higher than average for this alternative, while those associated with timber harvesting, developed recreation, and trail use would generally be lower than average.

Alternative B

The level and types of noise in this alternative would be similar to the existing condition. This alternative features the lowest level of total recreation use and second lowest timber harvest level. Like Alternative A, it is one of the quietest alternatives analyzed.

Cumulative Effects: Noise

Alternative C

This alternative would generate a high noise level when compared to present conditions and the other alternatives. It features the highest level of timber harvest and ranks second in both developed recreation construction and total recreation use.

Alternative D

This alternative would generate moderate noise levels when compared to the low levels occurring in Alternatives A and B and the high levels generated in Alternatives C and E. It features the second highest level of timber harvesting, but only moderate amounts of new developed recreation construction, trail construction, road use, and total recreation use.

Alternative E

Like Alternative C, this alternative would generate a high noise level. It features the highest levels of total recreation use and new construction for developed recreation, trails, and high standard system roads. Levels of timber harvesting are slightly less than Alternative D and emphasize uneven-aged management. This means the noise levels generated by timber harvesting would be less intense, but would occur more frequently on a given piece of land. Therefore, the net effect would be similar to Alternative D.

Effects of High Oil and Gas Demand on Alternatives

The effects of high oil and gas demand on Alternative D indicate that new oil and gas development would increase tenfold, timber volume harvested and total recreation use would decrease slightly, and developed recreation/trail construction would remain the same. This would increase the noise level for the alternative.

The actual effects of new oil and gas development on noise levels are dependent upon site specific factors, such as spacing requirements of each well, the need for support facilities, the location of existing developments, and the area's existing road network. Those areas with little existing oil and gas development and/or few roads would be impacted more than areas which are adjacent to existing developments or have a high density road network. Given that Alternative A emphasizes management of large areas with

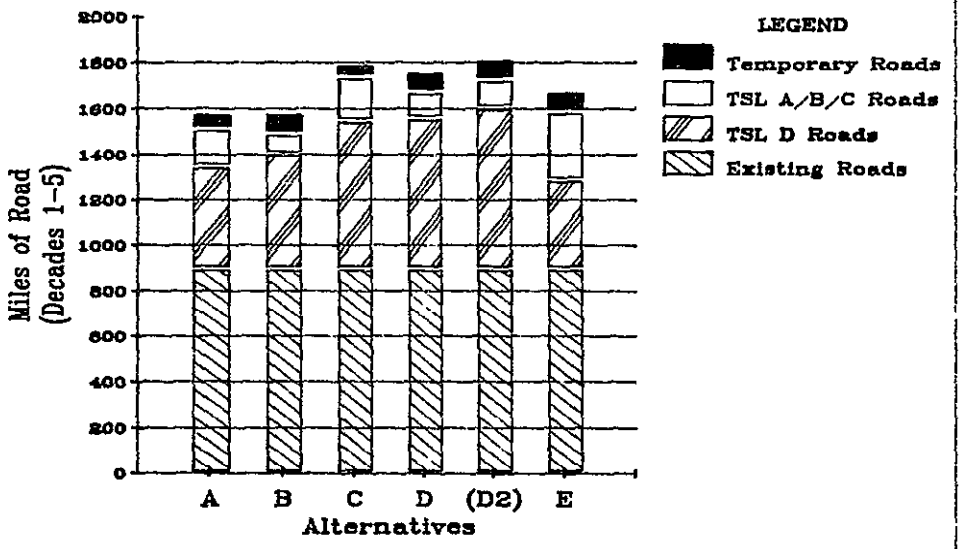
low road densities, the potential effects of intensive oil and gas development on the noise levels within Alternative A are much greater than those of Alternatives C and E, which emphasize intensive timber management. Alternatives B and D would experience somewhat moderate effects and, as indicated above, would show a slight increase in their noise levels as a result of high oil and gas demand.

ROADS

The transportation system that would result from implementation of a particular alternative is determined by the management emphasis of that alternative. The management emphasis is reflected in the allocation of land to the various management prescriptions. The benefits and outputs provided by each management prescription determine the mileage of roads needed in each Traffic Service Level and the management of traffic on the road system. See the section on roads in Chapter 3 (Page 3-12) for a discussion of the Traffice Service Level (TSL) concept.

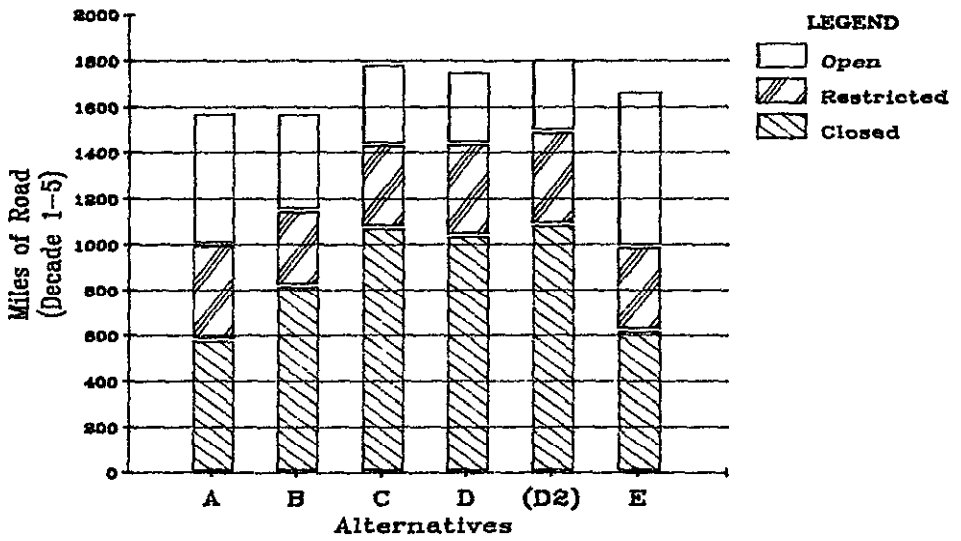
Figure 4-16 displays the existing miles of roads and proposed miles of roads in TSL A, B, C, D, and temporary roads. Figure 4-17 displays traffic management on the existing and proposed roads for each alternative.

FIGURE 4—16
Existing and New Forest Service Road Construction and Reconstruction*



*Does not include private roads built by oil/gas operators.

FIGURE 4—17
Forest Service Roads Closed, Restricted*, or Open to Public Use
(Does not include private oil/gas roads)



*Restricted roads open only a portion of the year

Alternative A

Alternative A requires the smallest road system to produce desired outputs and benefits. No new TSL A or B roads would be needed. This low level of road construction compared to other alternatives is primarily a result of the low volume of timber being harvested in Alternative A compared to the other alternatives. However, the overall road system for Alternative A is only slightly smaller than that for Alternative B, and requires a higher amount of TSL C roads.

The greater need for higher standard roads in Alternative A compared to Alternative B reflects the greater amount of uneven-aged timber management practiced in Alternative A.

Approximately 62 percent of the system would be closed to public vehicular use or regulated to restrict public use only to certain periods.

Alternative B

The road system needed to produce the benefits and outputs of Alternative B is slightly larger than that needed for Alternative A but smaller than that required for Alternatives C, D, and E.

Under Alternative B, 77 percent of the road system would be closed to public vehicular use or regulated to restrict public use only to certain periods. This level of closure and restriction is higher than Alternatives A and E, and approximately the same as for Alternatives C and D.

Alternative C

Alternative C requires the largest road system to produce its benefits and outputs. The size of the road system is primarily a reflection of the high volume of timber harvested in Alternative C compared to other alternatives. The greater use of TSL D roads compared to temporary roads in Alternative C is a result of the high level of clearcutting and shelterwood cutting. These silvicultural systems produce high volumes of timber per acre.

Approximately 81 percent of the road system would be closed to public vehicular use or regulated to restrict public use only to certain periods.

Alternative D

Alternative D requires the second largest road system to produce its benefits and outputs, exceeded only by Alternative C. This road system results primarily from the volume of timber produced under Alternative D, which is also second highest after Alternative C. Unlike Alternative C, however, more of the timber volume is produced from thinnings rather than final harvests.

In addition, there are four miles of TSL A roads proposed in Alternative D. These roads are needed to facilitate expansion of existing recreation sites. Approximately 82 percent of the road system would be closed to public vehicular use or regulated to restrict public use only to certain periods.

Alternative E

To produce the outputs and benefits of Alternative E, a road system is needed that is smaller than that required for

Alternatives C and D, but larger than that for Alternatives A and B. There are, however, more miles of the higher standard TSL C road proposed in Alternative E than in any other alternative because of the high emphasis on uneven-aged management.

Alternative E also has the highest requirements for high standard TSL A roads. These roads would access the resorts and other recreation developments proposed for this alternative.

Under this alternative, 58 percent of the road system would be closed to public vehicular use or regulated to restrict public use only to certain periods.

Effects of High Oil and Gas Demand on Alternatives

The Forest Service road system required for any alternative is primarily determined by the timber management activities occurring in that alternative. In modeling the high level of oil and gas demand for the preferred alternative, the volume of timber produced was only slightly below that produced in Alternative D. Therefore, the road mileage for Alternatives D and D2 is similar. Likewise for the other alternatives, no significant change in Forest Service road needs is expected under a high level of oil and gas development, assuming that timber production does not change. In some areas, the road needs of both the Forest Service and the mineral owner would be met by a single road system cooperatively planned, built, and managed.

RIPARIAN AREAS

In all alternatives, riparian areas would be managed to enhance and protect riparian-dependent values. The management practices that would significantly enhance riparian values are fish and wildlife habitat improvement activities. The practice of energy mineral development has the potential to adversely affect riparian values, because private mineral developers locate well sites based on geologic data rather than surface resource conditions. The level of oil and gas development is the same for all alternatives.

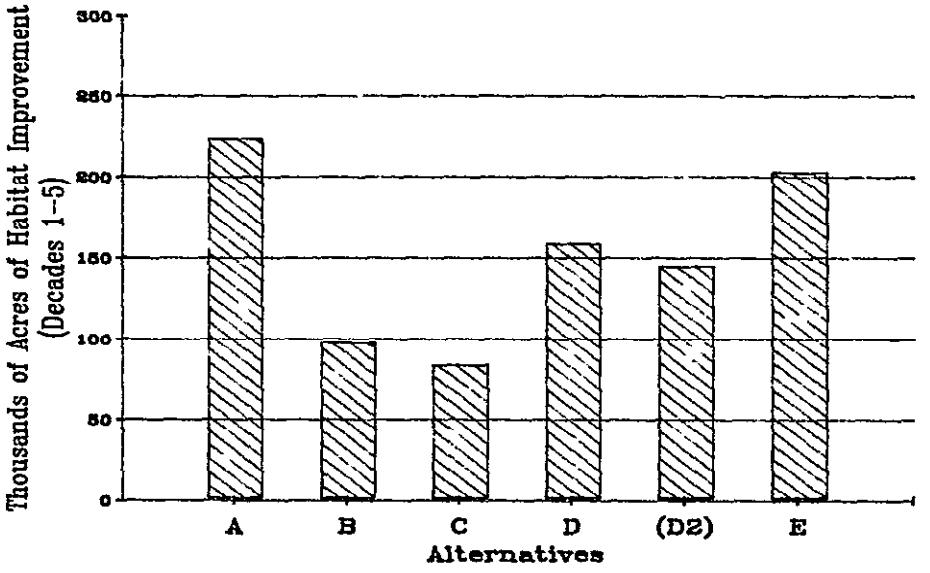
Figures 4-18 and 19 display wildlife habitat improvement work planned in each alternative. The levels of structural and non-structural wildlife improvements shown are for both riparian and non-riparian habitat. The amount of habitat improvement shown for each alternative, therefore, should be

interpreted as a relative indicator of the amount of riparian habitat improvement that would occur rather than as an absolute level.

Non-structural wildlife habitat improvements that might occur in riparian areas include such practices as release and pruning of apple trees to increase fruit production, planting of conifers for winter cover, and cutting of aspen for woodcock and grouse habitat. Structural habitat improvements in riparian areas might include construction of potholes and installation of nesting boxes.

Figures 4-20 and 21 display fish habitat improvement proposed in each alternative. All of the fish habitat work would occur in riparian areas since the aquatic ecosystem is, by definition, part of the riparian area.

FIGURE 4—18
Non-structuralWildlife Habitat Improvements



(Present Condition = 85 M Acres projected over same time span)

FIGURE 4--19
Structural Wildlife Habitat Improvements

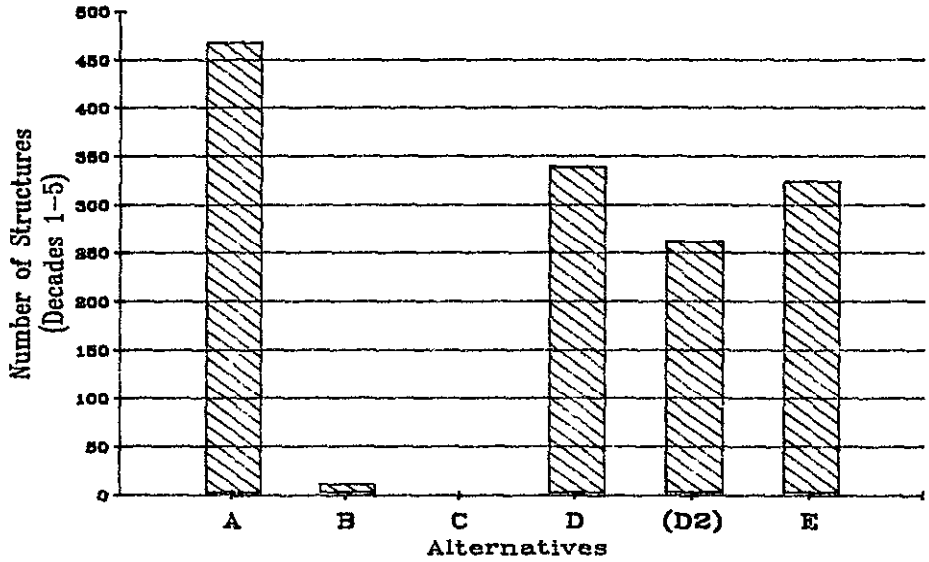
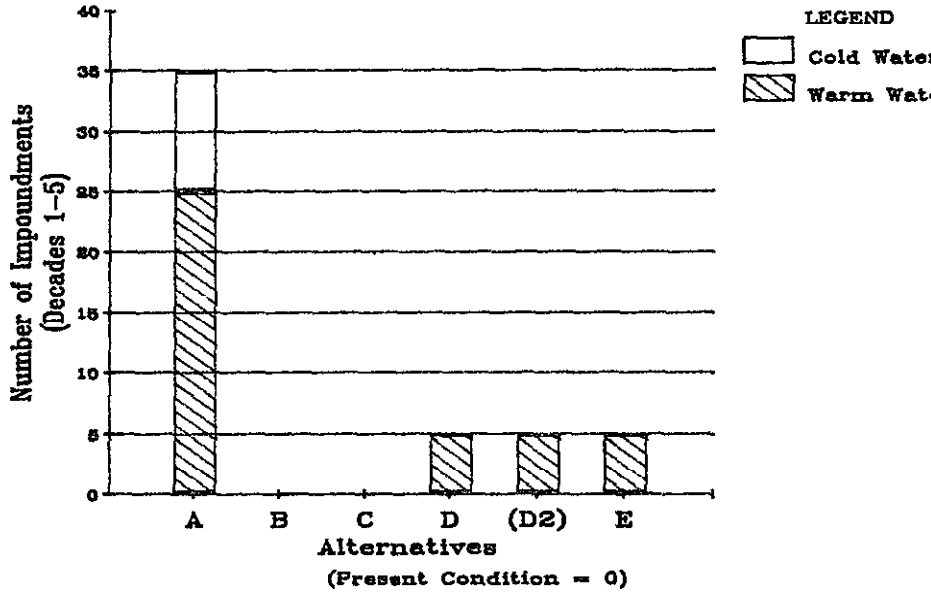


FIGURE 4--20
New Impoundments for
Fish Habitat Improvement



VEGETATION

Changes in the Forest's vegetation over time result from (1) the silvicultural systems used, either even-aged or uneven-aged management, (2) the proportion of the Forest being managed for timber or wildlife habitat, and (3) the processes of natural succession in areas where vegetation is not managed, such as wilderness areas. Table 4-25 displays the historical and present vegetation, and the changes in species composition and age-class distribution that would result from implementation of any Alternative. Trends in timber type composition are depicted in Figures 4-22, 4-23, and 4-24.

The following discussion emphasizes the changes in timber type composition and age classes which would occur over time under each alternative. Timber type composition and age class distribution reflect changes in horizontal and vertical diversity and in the proportion of shade tolerant versus intolerant tree species. All of these changes in vegetation characteristics over the long-term result from not only timber management practices, i.e., even-aged and uneven-aged silviculture, but also from non-structural wildlife habitat improvement, herbicide treatment, fertilization, and fencing, as discussed previously in Section C of this chapter.

FIGURE 4-22
Trends in Forest Composition
Allegheny Hardwoods

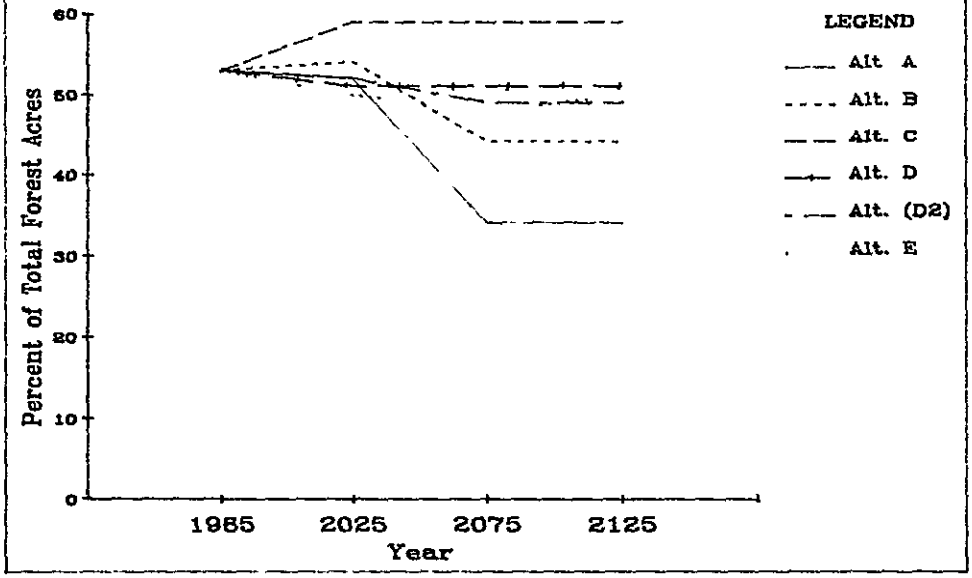


FIGURE 4-23
Trends in Forest Composition
Northern Hardwoods

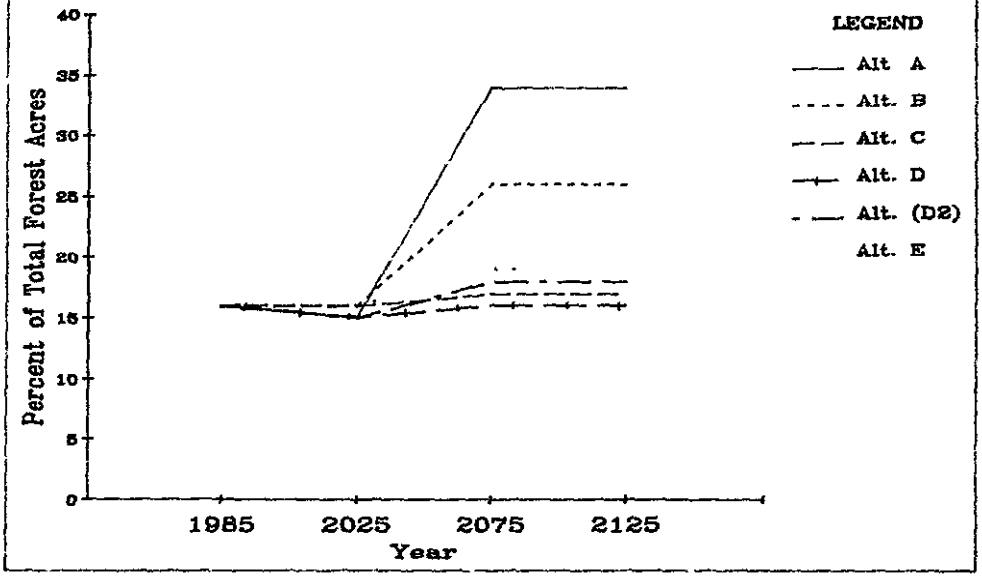


FIGURE 4-24
Trends in Forest Composition
Oak

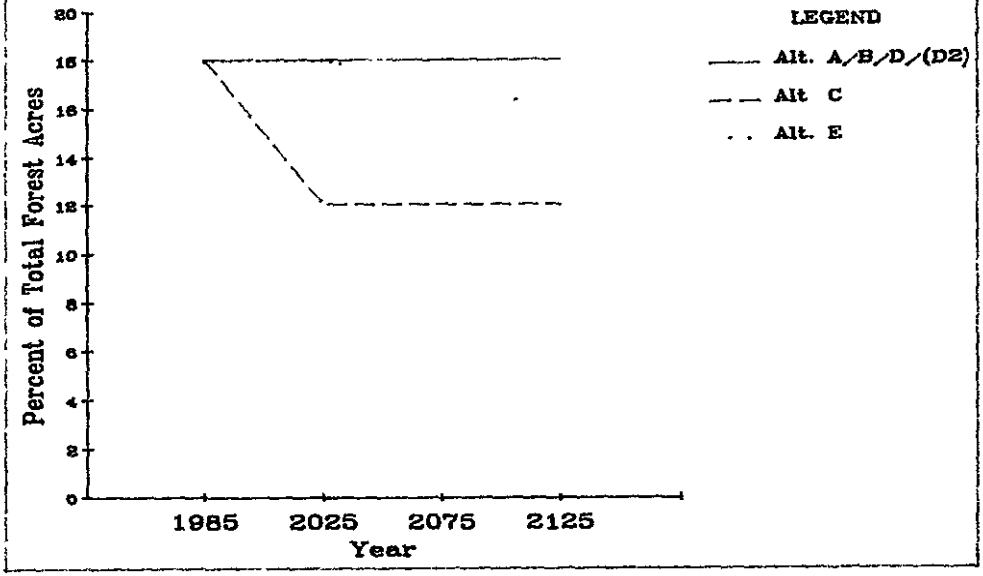


Table 4-25 Timber Types and Age Classes at Present, in the Past, and Under Forest Plan Alternatives
(Thousand Acres)

	Present		Pre-1800	Proclamation 1923	Alter. A Decade			Alter. B Decade			Alter. C Decade			Alternatives D & (D2) Decade			Alter. E Decade		
		(%)			3	5	15	3	5	15	3	5	15	3	5	15	3	5	15
Allegheny:																			
0-30:	9	(2)	5	136	0:	9:	4	60:	77:	66	155:	100:	109	92 (73):	116 (101):	100 (79)	7:	9:	31
31-50:	19	(4)	5	115	10:	0:	2	10:	37:	42	10:	107:	89	10 (10):	41 (41):	78 (67)	4:	6:	17
51-70:	136	(26)	5	20	1:	10:	16	19:	10:	26	14:	4:	64	18 (18):	10 (10):	40 (54)	18:	4:	42
71-90:	101	(20)	5	0	75:	1:	17	91:	19:	3	67:	13:	25	60 (85):	19 (18):	32 (33)	111:	18:	40
91-110:	6	(1)	5	0	69:	70:	6	82:	72:	3	48:	33:	4	81 (79):	13 (56):	5 (8)	1:	109:	2
111+	0		10	0	5:	65:	16	0:	47:	71	0:	39:	2	0 (0):	62 (39):	3 (10)	6:	1:	12
UEAM	0		0	0	105:	110:	110	13:	13:	13	6:	6:	6	1 (0):	1 (0):	1 (0)	109:	109:	109
Subtotal	271	(53)	35	271	265:	265:	171	275:	275:	225	300:	302:	299	262 (265):	262 (265):	259 (251)	256:	256:	253
Northern																			
0-30:	5	(1)	2	32	0:	0:	4	17:	2:	18	8:	35:	15	8 (14):	8 (17):	7 (21)	5:	3:	3
31-50:	4	(1)	2	29	5:	0:	3	4:	16:	16	5:	7:	8	5 (5):	7 (7):	7 (7)	3:	4:	2
51-70:	32	(6)	2	10	1:	5:	0	4:	4:	4	4:	5:	3	4 (4):	5 (5):	15 (15)	4:	3:	2
71-90:	29	(5)	2	10	15:	1:	0	31:	4:	2	53:	3:	1	33 (25):	4 (4):	2 (4)	25:	4:	2
91-110:	10	(2)	2	0	36:	15:	0	18:	32:	1	8:	23:	22	25 (27):	28 (21):	5 (5)	3:	23:	2
111+	1	(.5)	416	0	6:	38:	146	6:	22:	89	0:	4:	32	1 (1):	24 (22):	43 (38)	4:	6:	51
UEAM	0		0	0	14:	18:	18	2:	2:	2	4:	4:	4	1 (1):	1 (1):	1 (1)	37:	36:	37
Subtotal	81	(15.5)	426	81	77:	77:	171	82:	82:	132	82:	82:	85	77 (77):	77 (77):	80 (91)	81:	79:	99
Oak																			
0-30:	2	(.5)	2	34	5:	4:	10	19:	3:	30	10:	4:	12	26 (26):	7 (9):	19 (26)	9:	22:	14
31-50:	1	(.5)	2	50	2:	2:	9	2:	16:	5	2:	13:	6	2 (2):	25 (21):	14 (14)	1:	5:	4
51-70:	34	(6)	2	10	0:	2:	1	1:	2:	1	1:	0:	11	1 (1):	2 (2):	10 (7)	1:	1:	2
71-90:	45	(8)	2	5	14:	0:	0	32:	1:	1	34:	1:	1	32 (31):	1 (1):	2 (2)	30:	1:	2
91-110:	10	(2)	2	0	47:	14:	1	30:	34:	1	12:	28:	3	24 (24):	32 (31):	6 (3)	30:	30:	16
111+	2	(.5)	15	0	14:	57:	58	6:	34:	52	2:	13:	26	2 (2):	20 (22):	36 (34)	5:	19:	27
UEAM	0		0	0	9:	12:	12	3:	3:	3	1:	1:	1	4 (5):	4 (5):	4 (5)	15:	15:	15
Subtotal	93	(17.5)	25	98	91:	91:	91	93:	93:	93	62:	60:	60	91 (91):	91 (91):	91 (91)	91:	93:	80
Openland	10	(2)	0	15	23:	23:	23	11:	11:	11	11:	11:	11	25 (22):	25 (22):	25 (22)	27:	27:	27
Aspen	10	(2)	5	10	11:	11:	11	10:	10:	10	11:	11:	11	10 (10):	10 (10):	10 (10)	10:	10:	10
Conifer	19	(4)	10	19	19:	19:	23	19:	19:	19	29:	29:	29	19 (19):	19 (19):	19 (19)	19:	19:	23
Savannah	19	(4)	10	19	17:	17:	13	13:	13:	13	8:	8:	8	19 (19):	19 (19):	19 (19)	19:	19:	11
Openwater	8	(2)	0	0	8:	8:	8	8:	8:	8	8:	8:	8	8 (8):	8 (8):	8 (8)	8:	8:	8
TOTAL	511	(100)	511	511	511:	511:	511	511:	511:	511	511:	511:	511	511 (511):	511 (511):	511 (511)	511:	511:	511

Alternative A

By the end of decade 15, about 43 percent of the Forest would be in old growth timber. In addition, Allegheny hardwood and oak stands in the 0-110 age classes would comprise only about 13 perent of the forested area. About 94,000 acres or 35 percent of the Allegheny hardwood type would have converted to Northern hardwoods through natural succession.

Approximately 27 percent of the Forest would have an uneven-aged vegetative structure containing primarily shade-tolerant Northern hardwood species.

Aspen would be grown on about 2 percent of the Forest and pine or spruce on another 5 percent.

Savannahs containing Allegheny or Northern hardwoods would cover 3 percent of the Forest and open land another 5 percent.

In the long-term, this alternative would produce the least amount of horizontal diversity due to the large area with old growth timber.

Alternative B

Under this alternative, about 41 percent of the Forest would be in old growth by the end of decade 15. In addition, 44 percent of the Forest would contain Allegheny hardwood timber. Most of these stands would contain high amounts of cherry, ash, and yellow poplar and be regenerated before they attained an age of 100 years. Therefore, a large part of the Forest would contain a mixture of seedlings, saplings, poletimber, and young sawtimber.

The Northern hardwood type would comprise 26 percent of the Forest by decade 15 as Allegheny hardwoods convert to Northern hardwoods through natural succession. This area would be less than that under Alternative A, but more than under the other three alternatives.

By decade 15 about 18 percent of the Forest would be Oak type, 2 percent Aspen type, 3 percent savannah, and 2 percent wildlife openings.

No conifers would be planted, but natural stands of hemlock would remain. No treatment of undesirable vegetation with herbicide would occur.

Alternative C

This alternative provides the least amount of old growth. About 11 percent of the Forest would be in the 110+ age class by decade 5.

From decade 3 and beyond, between 55 and 60 percent of the Forest would support more shade-intolerant Allegheny hardwoods, while oak would comprise 12 percent of the Forest. These two types would be managed for commercial timber production and would usually be regenerated before they attained an age of 100 years.

Even-aged northern hardwoods would occupy 15 percent of the Forest. About 37 percent of the oak type would be converted to the Allegheny hardwood type by decade 5.

The acreages of aspen, conifer, and savannah reached by the third decade and maintained through decade 15. From the present condition, conifer would increase 2 percent and savannahs would decrease to 2 percent of the Forest.

Horizontal diversity would be greater under Alternative C than under Alternatives A, B, or E, and it would be somewhat similar to Alternative D.

Alternative D

About 16 percent of the Forest would eventually become old-growth under this alternative, primarily in the oak and northern hardwood types.

Under this alternative, age class distribution would improve as compared to present conditions. Presently, 83 percent of the Forest's hardwood is in the 51-90 year age classes. Under Alternative D, 52 percent of the hardwood area would be in the 0-50 age class, 26 percent in the 51-90 age class, 22 percent in the 91+ age class by the end of decade 15. The remaining 2 percent would be managed under uneven-aged management. Alternative D would create greater age class diversity than would Alternatives A, B, or E, and it would be somewhat similar to Alternative C.

By decade 3 and beyond, openland would increase by 3 percent over the present condition on the Forest. Present condition levels of aspen, conifer, and savannah would be maintained.

Alternative E

Under this Alternative, almost 18 percent of the Forest would eventually be old-growth timber. One-third of the Forest would be uneven-aged. Shade tolerant northern hardwood species would be much more prevalent than they currently are.

By the end of decade 15, about 50 percent of the Forest would consist of Allegheny hardwoods, 19 percent would be Northern hardwoods, and another 16 percent would be in the Oak type. Age class distribution would improve over the current situation for both the Allegheny hardwood and the Oak types.

By decade 3, openland would increase by 3 percent over the present condition. Between decades 5 and 15, aspen would increase by 1 percent over the present condition and savannahs would decrease by 2 percent below the present condition.

Effects of High Oil and Gas Demand on all Alternatives

The effects of high oil and gas demand on Alternative D, displayed as D2, would be slight. Allegheny hardwoods would continue to be the dominant vegetative type. Within this type there would be a small realignment of age classes to more old stands. In addition, by decade 15, 14,000 acres of Allegheny hardwoods would convert to Northern hardwoods.

A high demand scenario would have just the opposite effects on age class diversity in the Oak and Northern hardwood types. The shift would increase the number of stands 0-30 years old for oak and northern hardwoods. The general distribution of oak would remain the same across the Forest, while the northern hardwood type would increase by 2.5 percent from present condition due to natural sucession.

The percentage of old growth would change within given vegetative types, but the percentage across all types would remain the same as under the low oil and gas demand scenario.

The percentage of land occupied by conifers, savannahs, and aspen would remain the same under both high and low demand. Wildlife openings would decrease to 4 percent of the total land base.

High oil and gas demand would have a similar vegetative effect on Alternatives A, B, C, and E as described for D2. Large numbers of small openings in well sites and rights-of-way would be developed during the first five decades. These openings would and be managed as inclusions within existing timber stands. Their principal effect would be to decrease both stocking levels and timber yields in the stands where they occur. No appreciable effects in either the distribution or total acreage occupied by vegetation type would occur for any of the alternatives.

By the end of the fifth decade, oil and gas developments would begin to phase out of production. Vegetation would begin to invade well sites, pipelines, and roads as they are used less frequently or are abandoned. By the end of the 15th decade, stocking levels and timber yields may be similar to those that would occur under the low demand scenario. Age class distribution among individual types would differ from that shown for low demand, however.

WILDLIFE

The cumulative effects on wildlife stem from the significant impacts on wildlife habitat from management practices listed in Table 4-2. The significant effects on wildlife habitat described in section C of this chapter differ by alternative. These effects are based on the different levels of timber management practices, the acres of non-structural and number of structural habitat improvements, the amount of road construction and reconstruction, wilderness management, and whether there is low or high demand for oil and gas development.

To determine the effects of management on wildlife, it was necessary to review the habitat requirements for all species that occur on the Forest. Because several hundred species occupy the Forest during the various times of the year, a small number of management indicator species were selected to represent associated species having similar habitat requirements. Indicator species habitat requirements were calculated to determine the amount of habitat needed to maintain viable populations of them.

Table 4-26 displays the acres of each habitat type presently occurring on the National Forest and the acres that would occur in each alternative when steady state conditions are reached. It should be noted that the total acreage under any alternative does not equal the total acres of the National Forest. This anomaly results from the hemlock component being associated with deciduous forest, with the acreages consequently overlapping.

Table 4-26 Habitat Types by Alternative at Steady State (Thousand Acres)

Habitat Type	PC[1]	A	B	C	D	D2	E
Open	10	23	11	11	25	22	27
Savannah	19	13	13	8	19	19	11
Regenerating Deciduous (0-30)	16	18	114	136	126	126	48
Young Deciduous (31-70)	226	31	93	178	164	164	69
Mature Deciduous (71-110)	201	24	11	57	109	55	64
Old Growth Deciduous (111+)	3	220	210	58	82	82	101
Regenerating Hemlock (0-30)	1.3	1.4	9.2	11.0	10.2	10.2	3.9
Young Mixed Hemlock-Deciduous (31-70)	10.5	1.4	4.3	8.2	7.5	7.5	3.2
Mature Mixed Hemlock-Deciduous (71-110)	18.7	2.2	1.0	5.3	10.1	5.1	5.9
Old Growth Mixed Hemlock-Deciduous (111+)	2.4	199	111	55	67	65	206
Aspen	10	11	10	11	10	10	10
Open Water	8	8	8	8	8	8	8

1 PC = present condition

Effects on Management Indicator Species

Table 4-27 shows the cumulative effects of the alternatives on the management indicator species. This is measured by population index and habitat. Population index shows the relative changes in population among the alternatives compared to present conditions (PC). The magnolia warbler, for example, is an indicator of regenerating hemlock, 0-30 years old. Currently, 1,300 acres of regenerating hemlock exist in the Forest. Alternative A would produce 1,400 acres of regenerating hemlock. The population index in Alternative A for magnolia warbers is 1,400 divided by 1,300, or 1.07. This figure means the potential exists under Alternative A for the population of the magnolia warbler to increase by 7 percent. The population index provides a means for comparison between alternatives and with present conditions.

Table 4-27 Management Indicator Species Populations and Habitat by Alternative
(Steady State Condition)

Indicator Species	Habitat Indicator	PC[1]	A	B	C	D	D2	E
Ruffed Grouse	Regenerating Deciduous	1	1.11	4.77	5.65	5.23	5.23	2.23
White-tailed Deer	Regenerating Deciduous	1	1.13	7.13	8.50	7.88	7.88	3.00
Rattlesnake	Regenerating Deciduous	1	1.13	7.13	8.50	7.88	7.88	3.00
Red-shouldered Hawk	Mature Deciduous	1	.12	.05	.28	.54	.27	.31
Yellow-Bellied Sapsucker	Mature Deciduous	1	.12	.05	.28	.54	.27	.31
Pileated Woodpecker	Old Growth Deciduous	1	73.33	70.00	19.33	27.33	27.33	33.66
Magnolia Warbler	Regenerating Hemlock	1	1.07	7.07	8.46	7.85	7.85	3.00
Hermit Thrush	Mature Mixed Hemlock-Deciduous	1	.12	.05	.28	.54	.27	.31
Black-throated Green Warbler	Mature Mixed Hemlock-Deciduous	1	.12	.05	.28	.54	.27	.31
Great Blue Heron	Old Growth Mixed Hemlock-Deciduous	1	82.92	46.25	22.92	27.92	27.08	85.83
Barred Owl	Old Growth Mixed Hemlock-Deciduous	1	9.54	5.31	2.86	3.65	3.32	10.04
American Woodcock	Regenerating Deciduous (Aspen)	1	1.10	1.00	1.10	1.00	1.00	1.00
Beaver	Regenerating Deciduous (Aspen)	1	1.10	1.00	1.10	1.00	1.00	1.00
Brook Trout	Cold Water	1	1.00	1.00	1.00	1.00	1.00	1.00
Walleye	Warm Water	1	1.00	1.00	1.00	1.00	1.00	1.00

1 PC = present condition

The extent to which the various habitat types are produced and perpetuated differs by alternative. Consequently, an alternative may benefit some species more than others. However, all alternatives would produce habitat capable of supporting viable populations of management indicator species within the planning area. It is also recognized that many wildlife species utilize several different habitat types; however, it is felt that all of the major habitat types are represented and, therefore, all species habitat requirements are met.

The reader may note that some habitat types in Table 4-26, such as young deciduous or young mixed hemlock-deciduous, are not represented by indicator species in Table 4-27. These habitat types are transitions between regenerating and mature forests. No definite animal communities are particularly associated with these age classes, so they are not represented by indicator species in Table 4-27.

Cumulative Effects: Wildlife

The effects of all practices are reflected above in the population indices for indicator species. These effects vary by alternative and are discussed below. The effects of energy mineral development and wilderness are the same for all alternatives and, therefore, will be discussed only once.

Alternative A

Habitat capability would increase for nine of the fifteen management indicator species. Generally, species associated with regenerating deciduous, regenerating hemlock, old growth deciduous, and old growth mixed hemlock-deciduous habitats would benefit the most. This alternative has the second highest increase in habitat capability for species requiring old growth mixed hemlock-deciduous and the highest increase in old growth deciduous. A decrease of 88 percent in the mature deciduous and in the mature mixed hemlock-deciduous types are the second highest decreases of all the alternatives.

Road construction and reconstruction would remove 2,578 acres (Tables 4-12, 4-13) of wildlife habitat. Human activity would increase as a result of new and easier access. This alternative has the lowest amount of road building.

Alternative B

Habitat capability would increase for seven of the fifteen management indicator species. Generally, species associated with regenerating deciduous, regenerating hemlock, old growth deciduous, and old growth mixed hemlock-deciduous habitats would benefit the most. This alternative has the third highest increase in habitat capability for species requiring old growth mixed hemlock-deciduous and the second highest increase in old growth deciduous. A decrease of 95 percent in habitat capability for species utilizing the mature deciduous and the mature mixed hemlock-deciduous types are the highest decreases of all the alternatives.

Road construction and reconstruction would remove 2,932 acres (Tables 4-12, 4-13) of wildlife habitat. Human activity would increase as a result of new and easier access. This alternative has the third lowest amount of road building.

Alternative C

Habitat capability would increase for nine of the fifteen management indicator species. Generally, species associated with regenerating deciduous, regenerating hemlock, and old growth mixed hemlock-deciduous habitats would benefit the most. This alternative has the lowest increase in habitat capability for species requiring old growth mixed hemlock-deciduous and a 44 percent decrease in old growth deciduous. A decrease in habitat capability of 72 percent in the mature deciduous and in the mature mixed hemlock-deciduous types are the third highest decreases of all the alternatives.

Road construction and reconstruction would remove 3,836 acres (Tables 4-12, 4-13) of wildlife habitat. Human activity would increase as a result of new and easier access. This alternative has the highest amount of road building.

Alternative D

Habitat capability would increase for seven of the fifteen management indicator species. Generally, species associated with regenerating deciduous, regenerating hemlock, and old growth mixed hemlock-deciduous habitats would benefit the most. This alternative has the third lowest increase in habitat capability for species requiring old growth mixed hemlock-deciduous and the lowest decrease in old growth deciduous. A decrease in habitat capability of 46 percent in the mature deciduous and the mature mixed hemlock-deciduous types are the lowest decreases of all the alternatives.

Road construction and reconstruction would remove 3,396 acres (Tables 4-12, 4-13) of wildlife habitat. Human activity would increase as a result of new and easier access. This alternative has the second highest amount of road building.

Alternative E

Habitat capability would increase for seven of the fifteen management indicator species. Generally, species associated with regenerating deciduous, regenerating hemlock, and old growth mixed hemlock-deciduous habitats would benefit the most. This alternative has the highest increase in habitat capability for species requiring old growth mixed hemlock-

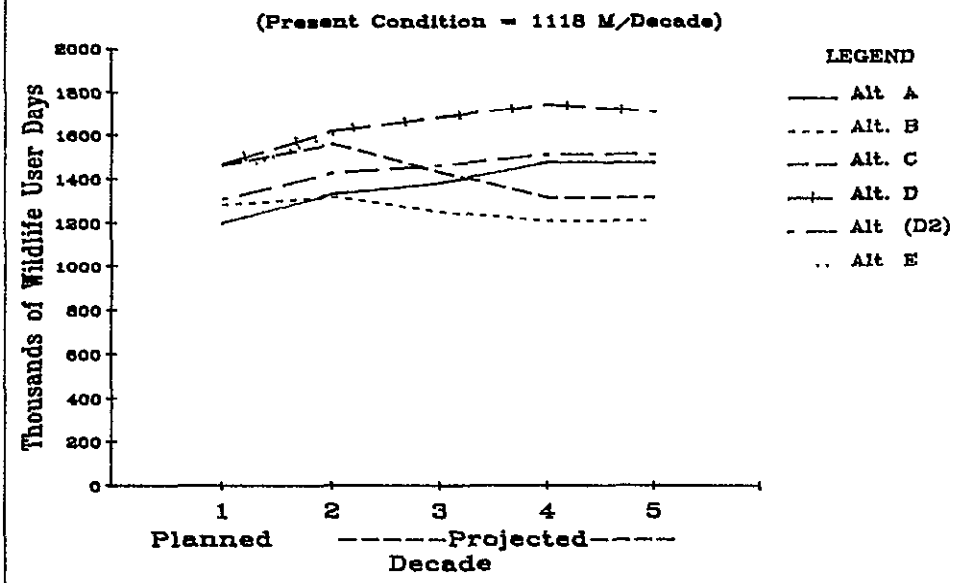
deciduous and the second lowest decrease in old growth deciduous. Decreases of 69 percent in both the mature deciduous and the mature mixed hemlock-deciduous types are the second lowest decreases of all the alternatives.

Road construction and reconstruction would remove 2,860 acres (Tables 4-12, 4-13) of wildlife habitat. Human activity would increase as a result of new and easier access. This alternative has the second lowest amount of road building.

Effects on Big-Game and Small-Game Species

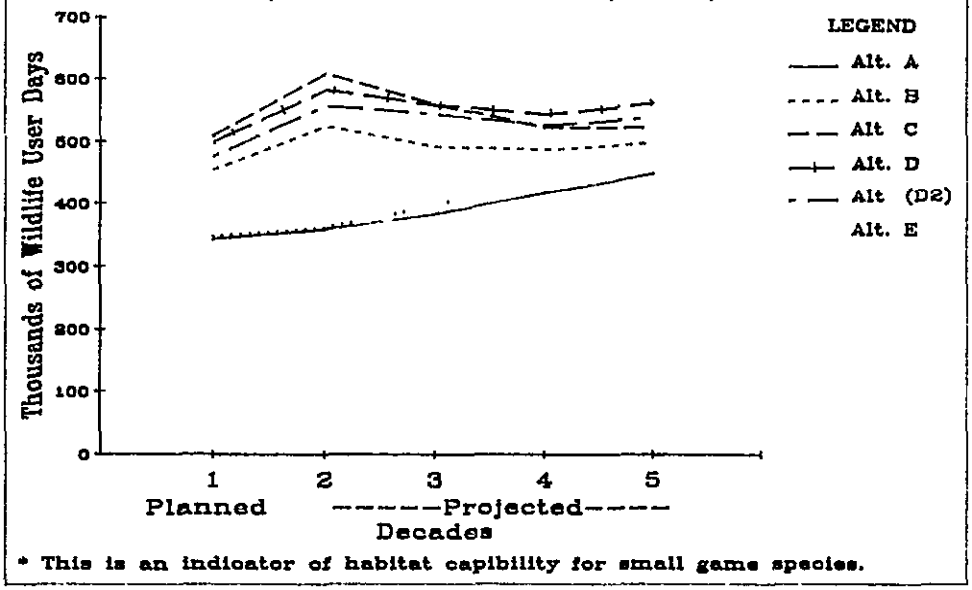
Wildlife user days were calculated for big-game and small-game to show the cumulative effect of management practices on habitat productivity which increases game populations. Changes in age class distribution over time, structural and non-structural habitat improvements, low demand versus high demand oil and gas development, and the standards and guidelines for each management area affect habitat capability. The changes in wildlife user days for each alternative compared to the present condition were derived solely from these changes or improvements in habitat capability. As the habitat was changed or improved, the habitat capability was estimated in terms of number of animals for the species concerned. The ratio of user days per animal harvested, based on Pennsylvania Game Commission data, was then used to calculate the change in wildlife user days. Therefore, a particular percentage change in wildlife user days represents a corresponding change in habitat capability. Figures 4-25 and 4-26 display wildlife user days for big-game (white-tailed deer, black bear, and wild turkey) and small-game. Since changes in wildlife populations generally respond slowly to management activities, the data for the fifth decade more accurately portrays cumulative effects of the alternative management strategies.

FIGURE 4–25
Trends in Big Game Wildlife User Days*



*This is an indicator of habitat capability for deer, wild turkey, and bear.

FIGURE 4–26
Trends in Small Game Wildlife User Days*



* This is an indicator of habitat capibility for small game species.

Big-game habitat capability would increase under all alternatives during the first two decades, with Alternatives A, D, and E showing the greatest increases before dropping slightly in the fifth decade.

After the second decade, Alternatives B and C both show a decline in habitat capability for big-game. The large decline in Alternative C results from the high amount of even-aged timber management reducing habitat for the wild turkey. The low level of direct investments in habitat improvement under both alternatives, as shown previously in Figure 4-20, also contributes to the decrease in habitat capability.

Small-game habitat capability would also increase during decades one and two under all alternatives, with the most significant increases occurring in Alternatives B, C, and D. Alternatives A and E show continuous increases over five decades. Habitat capability declines during decades three and four under Alternatives B, C, and D, but begins to increase again during the fifth decade and exceeds the capability for Alternatives A and E.

Habitat capability for selected game species was analyzed for each alternative. The following are brief summaries of these analyses.

Alternative A

Deer habitat capability would not increase significantly during the first decade; however, a significant increase would occur during the second decade. Slight increases would occur for the next few decades before levelling off.

Turkey habitat capability would increase during the first decade. The increases would continue in succeeding decades.

Bear habitat capability would increase slightly during the first decade and then level off.

Alternative B

Deer habitat capability would increase during the first decade and much more in the second decade. A decrease would occur during the third decade and continue for two more decades; however, habitat capability would still be above the current level.

Turkey habitat capability would increase slightly for the first decade and then gradually decrease during succeeding decades.

Bear habitat capability would remain at the current level.

Alternative C

Deer habitat capability would increase in the first decade, and much more during the second decade. A decrease would occur during the third decade and would continue for two more decades; however, habitat capability would still be above the current level.

Turkey habitat capability would decrease slightly in the first decade. A larger decrease would begin in the second decade and would continue for succeeding decades.

Bear habitat capability would decrease in the first decade and would continue decreasing for succeeding decades.

Alternative D

Deer habitat capability would increase during the first decade, and much more in the second decade. It would begin decreasing slightly during the third decade and would continue decreasing during the fourth and fifth decades; however, habitat capability would still be higher than the currrent level.

Turkey habitat capability would increase during the first decade and in succeeding decades.

Bear habitat capability would increase slightly the first decade and then level off.

Alternative E

Deer habitat capability would not increase significantly during the first decade; however, a significant increase would occur during the second decade. Gradual increases would occur for the next three decades.

Turkey habitat capability shows a large increase during the first decade. Increases also would occur in the next three decades.

Bear habitat capability would increase slightly during the first decade and then level off.

Effects of High Oil and Gas Demand on the Alternatives

Intensive oil and gas development affects wildlife habitat and wildlife. There may be disturbance to species of special concern, as well as lost woodland habitat consisting of mast trees, den trees, snags, and conifer cover in the cleared areas. In addition to the 8,200 acres of present clearing, 24,000 acres of wildlife habitat would be removed to construct roads, well site, and pipelines by decade 15. Human activity would increase substantially due to the improved road access.

Habitat capability would decrease under all the alternatives. High densities of roads, pipelines, and well sites would fragment all habitat types where development occurs. Alternatives that have the lowest amount of a particular habitat type would be impacted the most. For example, Alternatives C, D, and E have the least amount of old growth forest. Under a high oil and gas scenario, this habitat type would be impacted more than under Alternatives A and B, which have a higher amount of old growth forest.

Management indicator species and species of special concern that are especially sensitive to human activities and habitat fragmentation would be affected under all alternatives. The increased degree of development and the expected increase in human access would have the most impact during the first five decades. The impact would then decrease by the end of the fifteenth decade. The great blue heron, Coopers hawk, red-shouldered hawk, northern goshawk, sharp-shinned hawk, common raven, and rattlesnake are the Species of Special Concern in Pennsylvania that are the most sensitive to minerals development.

Habitat capability for big-game decreases approximately 11 percent in the first decade, compared to Alternative D. Over the next four decades, big game wildlife user days would increase. These trends would be similar for all the alternatives if the high oil and gas demand occurs. By the fifth decade, habitat capability would be similar to habitat capability in the first decade under Alternative D.

Habitat capability for small game would be approximately five percent lower than under Alternative D in each of the first two management periods. A decrease would also occur in the next three management periods, but at a slightly lower percentage. These trends would be similar across all alternatives.

Wilderness

Ten thousand acres is designated wilderness in all alternatives. As the wilderness reaches steady state, the habitat capability will increase for cavity-nesting birds and mammals, especially pileated woodpeckers, barred owls, and gray squirrels. Early successional vegetaton will decrease over time and correspondingly reduce the populations of species associated with regenerating deciduous, such as white-tailed deer, ruffed grouse, and chestnut-sided warblers.

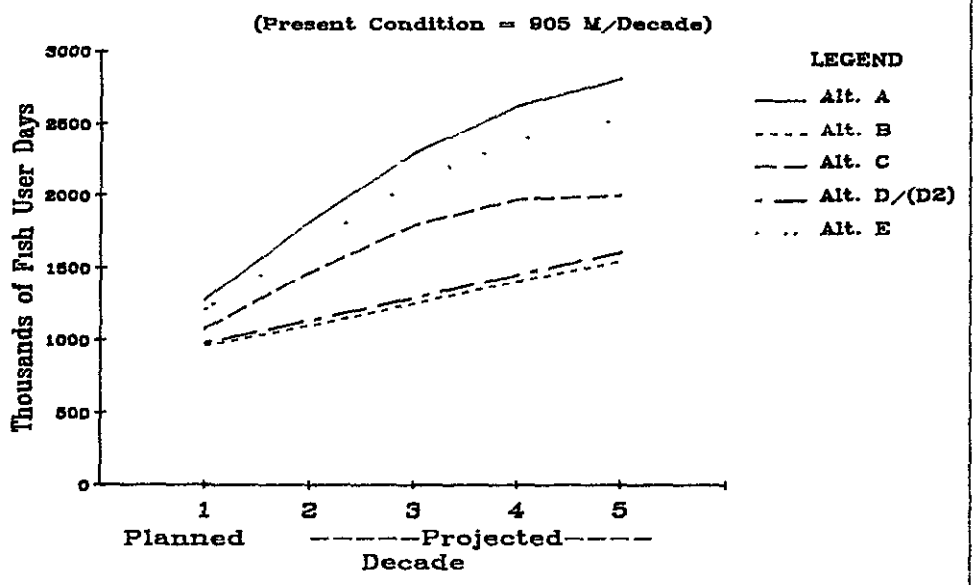
FISH

The cumulative effect of an alternative on the fisheries under the low oil and gas demand scenario was derived primarily from specific fishery management practices. Practices include (1) population surveys and creel censuses to insure optimum utilization and management of native and stocked fish, (2) stream and lake habitat improvement, and (3) construction of new impoundments. Standards and guidelines are expected to mitigate significant effects of other management practices.

Figure 4-27 displays the changes in fish user days which directly correlates to trends in habitat capability for warm water fisheries. This includes the Allegheny River, some small impoundments, and about 90 percent of the Allegheny Reservoir. Figure 4-28 displays the same type data for cold water fisheries, but includes streams, some small impoundments and 10 percent of the Allegheny Reservoir.

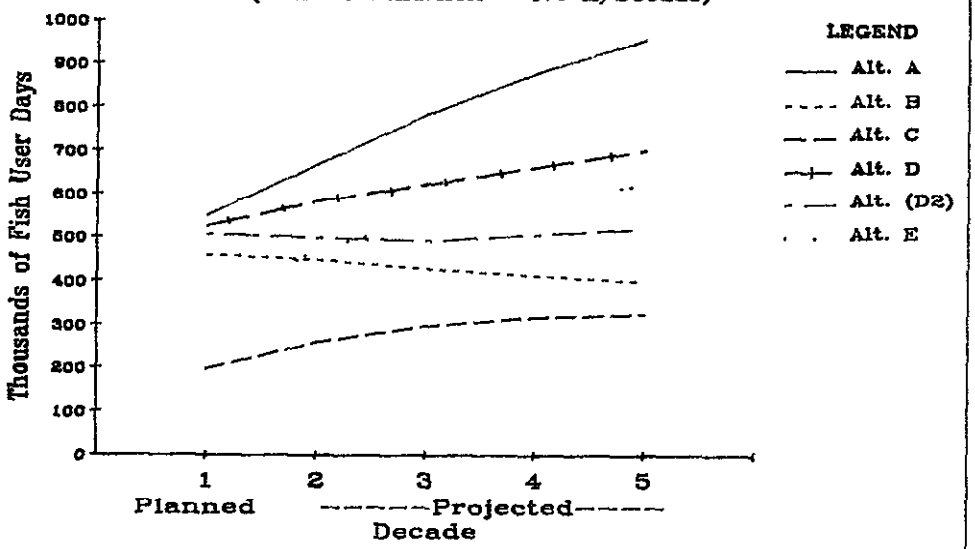
The change in fish user days for each alternative compared to the present condition, was derived solely from these changes in habitat capability. As the habitat was changed, the habitat capability was estimated in terms of number of fish. The ratio of user days per fish harvested, based on historical data, was then used to calculate the change in fish user days. Therefore, a particular percentage change in fish user days represents a corresponding change in habitat capability.

FIGURE 4-27
Trends in Warm Water Fish User Days*



*This is an indicator of habitat capability for warm water fish species.

FIGURE 4-28
Trends in Cold Water Fish User Days*



*This is an indicator of habitat capability for cold water fish species.

The cumulative effects of alternatives on habitat capability for warm and cold water fisheries, the management indicator species, and species of special concern in Pennsylvania are summarized below. Following these general discussions on habitat capability, the effects of the alternatives on specific fishing opportunities are summarized by alternative.

Cumulative Effects on Habitat Capability

Warm water fisheries habitat capability would increase from the present condition under all alternatives. The most significant increases would occur in Alternatives A, E, and C. Alternatives B and D have similar benefits; however, Alternative D is slightly higher than B.

Cold water fisheries habitat capability would increase under Alternatives A, C, D, and E. The most significant increases would occur in Alternatives A and E. Alternative C has the lowest benefits of all the alternatives. Habitat capability would decrease under Alternatives B and D with a high level of oil and gas development (D2).

Management Indicator Species - The brook trout and walleye were selected because this trout occurs in most streams and the walleye in the Allegheny River and Allegheny Reservoir, which are the major warm water fisheries within the Forest. Habitat will be provided in all alternatives to maintain viable populations of all fishes.

Species of Special Concern in Pennsylvania - Habitat capability for the species that occur in waters within the Forest will not be adversely affected by the management programs in any of the alternatives. These species occur in the rivers and large streams where Forest Service management will have insignificant effects on their habitats.

Cumulative Effects on Fishing Opportunity by Alternative

Alternative A

This alternative would provide the largest increases in both warm water and cold water fishing opportunities.

Fishing opportunities on the Allegheny Reservoir would increase from 450,000 to 700,000 fish user days the first decade, reflecting increases in both warm and cold water fisheries benefits. The fishery would provide 1,993,000 fish user days by the fifth decade.

Management of the Allegheny River fishery would increase fishing opportunities from 235,000 to 290,000 fish user days the first decade. These benefits would continue to increase in succeeding decades with the fishery providing 760,000 fish user days by the fifth decade.

Management of the stocked and native trout streams would increase fishing opportunities from 400,000 to 430,000 fish user days the first decade. Studies would provide data to insure proper utilization of these fisheries and determine the quantity of hatchery fish needed to meet current and future demand. Additional trout fishing benefits from the stocking program would accrue each decade and provide 670,000 fish user days by the fifth decade. The harvest of native trout would remain relatively constant.

Management of existing small impoundments and development of new warm water and cold water impoundment would increase fishing opportunities from 35,000 to 169,800 fish user days the first decade. By the fifth decade, the fishery would provide 340,000 fish user days.

Alternative B

This alternative would provide the smallest increases in warm water outputs over five decades. Outputs from cold water fisheries would decrease over time, with Alternative B providing the second to the lowest benefits by the fifth decade.

Fishery opportunities in the Allegheny Reservoir would increase from 450,000 to 700,000 fish user days the first decade, reflecting increases in both warm water and cold water fisheries. The fishery would provide 1,350,000 fish user days by the fifth decade.

Fishing opportunities in the Allegheny River would not change significantly the first decade, but would increase from 230,000 to 290,000 fish user days by the fifth decade.

Fishing opportunities from stocked trout streams would decrease from 400,000 fish user days to 380,000 fish user days in the first decade. Continued declines in the stocked trout program over five decades would result in outputs of 260,000 fish user days in the fifth decade for the total fisheries on native and stocked trout steams.

The small impoundment fishing opportunities would not change significantly the first decade; however, a slight decrease would occur. Opportunities would increase from 34,000 to 46,000 by the fifth decade.

Alternative C

Warm water fishing opportunities would increase over time and will be third highest after Alternatives A and E in the fifth decade. Opportunities for cold water fishing would increase over time but are the lowest for any alternative.

Fishing opportunities in the Allegheny Reservoir would increase from 450,000 to 910,000 fish user days the first decade, with increases in both cold water and warm water fisheries benefits occurring. This fishing would provide 1,960,000 fish user days by the fifth decade. These benefits are based on the assumption that intensive development of recreation facilities around the reservoir would not have a significant adverse effect on fishing use because of conflicting water uses.

Fishing opportunities in the Allegheny River would decrease slightly from 235,000 to 220,000 fish user days the first decade and stabilize at that level.

Fishing use on trout streams would decrease with the elimination of the stocking program; however, after a short period of time, additional fishing use would develop on native trout streams. These streams can support only 30 percent of existing trout fishing use. Catch rates would decrease as fishing demand increases. Fishing opportunities would decrease from 400,000 to 100,000 fish user days the first decade and stabilize at 120,000 fish user days by the second decade.

Small impoundment fisheries would be protected; however, no effort will be made to stock fish, increase production, or manipulate existing fish populations. A reduction in catch rates would occur as demand increases. Fishing opportunities would decrease from 35,000 to 34,000 fish user days the first decade. This decrease would continue in succeeding decades with the fishing providing only 14,000 fish user days by the fifth decade.

Alternative D

This alternative is the second lowest in warm water fisheries outputs over five decades and third highest in cold water outputs after the first decade.

Fishing opportunities in the Allegheny Reservoir would increase from 450,000 to 784,000 fish user days the first decade with increases occuring in both warm water and cold water fishery benefits. The fishery would provide 1,350,000 fish user days by the fifth decade.

The Allegheny River fishing opportunities would not change significantly the first decade, but would increase from 230,000 to 290,000 fish user days by the fifth decade.

Management of trout streams using improved management techniques would increase fishing opportunities from 400,000 to 430,000 fish user days the first decade. Fishing use would increase to 550,000 fish user days by the fifth decade.

Management of existing small impoundments and development of new warm water impoundments would increase fishery opportunities from 35,000 to 45,000 fish user days the first decade. These benefits would continue to increase in succeeding decades with the fishery providing 97,000 fish user days by the fifth decade.

Alternative E

This alternative would provide the second highest outputs in the warm water fishery. After the first decade, this alternative would also provide the second highest cold water fisheries outputs.

Fishing opportunities in the Allegheny Reservoir would increase from 450,000 to 926,000 fish user days in the first decade with increases occurring in both warm water and cold water fisheries benefits. These benefits would continue to increase in succeeding decades with the fishery providing 1,976,000 fish user days by the fifth decade.

Fishing opportunities in the Allegheny River would not change significantly in the first decade, but would increase from 232,000 to 608,000 fish user days by the fifth decade.

Fishing opportunities in stocked and native trout streams would decrease from 400,000 to 278,000 fish user days the first decade. Production in native trout streams would decrease in succeeding decades; however, supplemental trout stocking would increase fishing opportunities. The fishery would provide 408,000 fish user days by the fifth decade.

Management of existing small impoundments and development of new warm water impoundments would increase fishing opportunities from 35,000 to 108,800 fish user days the first decade. The fishery would provide 155,000 fish user days by the fifth decade.

Effects of High Oil and Gas Development on Alternatives

Under variation D2, no significant decrease in habitat capability would occur for warm water fisheries, the cold water fisheries in the Allegheny Reservoir and Allegheny River, and species of special concern in Pennsylvania. Habitat for trout may be reduced five percent by the end of the third decade and then will level off. The recovery period for the streams affected will vary based on the activities in each watershed.

The effect on Alternatives A, B, C, and E would be similar to those for Alternative D.

RECREATION OPPORTUNITIES

The alternatives respond to the two recreation management problems by providing different levels of (1) developed recreation sites, (2) facilities to support dispersed recreation uses, and (3) allocations to land uses providing different types of recreation opportunities.

The Hickory Creek and Allegheny Islands Wilderness Areas and the Allegheny National Recreation Area are the same for all alternatives; therefore, they will not be discussed by alternative.

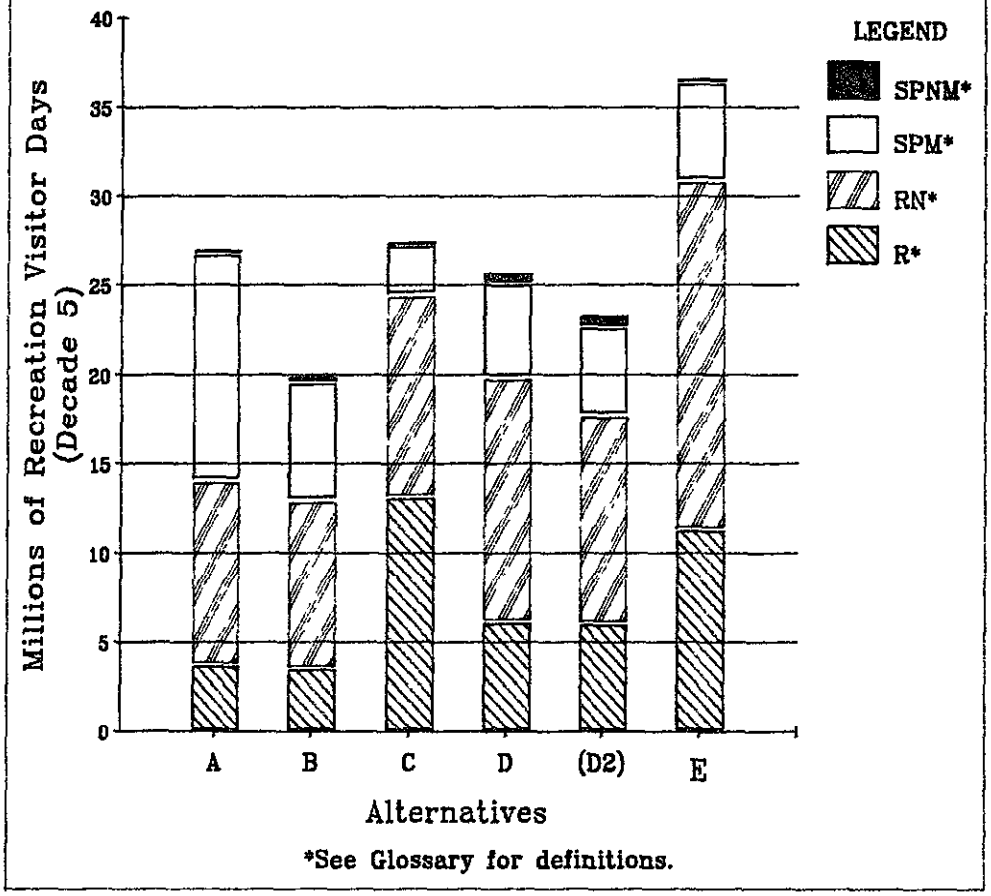
Each alternative contains a unique mix of various management practices. Recreation settings represented by the ROS classes, and the amount of use, are the result of each alternative's mix of interacting management practices. These management practices include managing developed recreation sites, managing dispersed recreation, even-aged silviculture, road building, wildlife and fish habitat

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Cumulative Effects: Recreation Opportunities

improvement, mineral development, and wilderness management. Anticipated recreation use in each ROS Class is shown in Figure 4-29 (see the glossary for ROS Class descriptions).

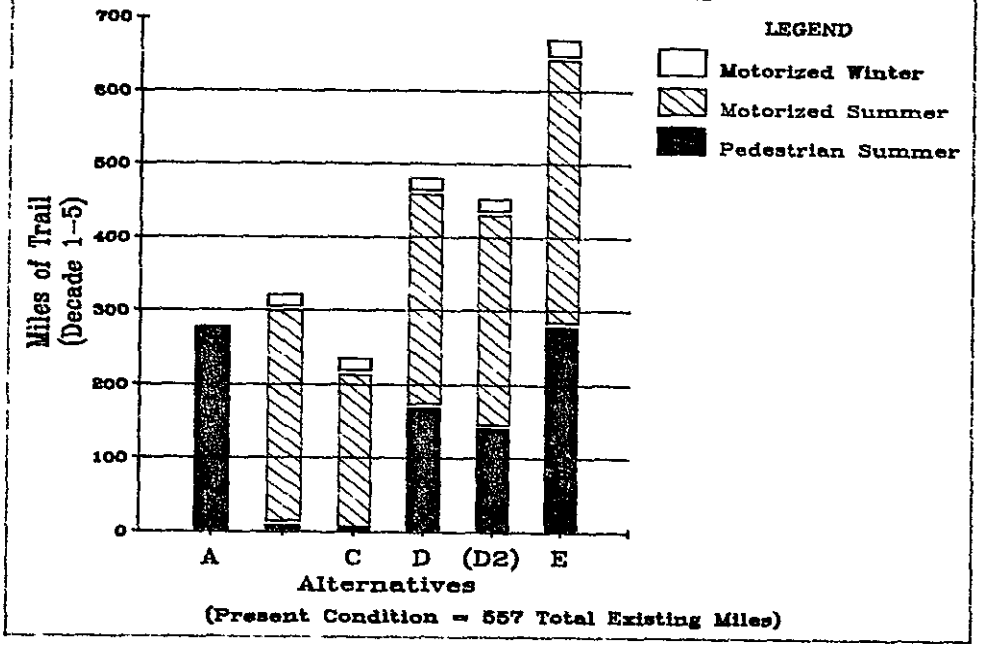
FIGURE 4-29
Recreation Use by
Recreation Opportunity Spectrum Class
(Present Condition = 19 MM/Decade)



*See Glossary for definitions.

Figure 4-30 displays trail construction proposed for each alternative, including hiking trails (pedestrian summer), snowmobile trails (motorized winter), and trailbike trails (motorized summer).

FIGURE 4—30
New Trail Construction



Alternative A

This alternative would provide a large amount of dispersed recreation opportunities in large areas with low road density. Existing campgrounds would be maintained and new facilities constructed during the first four decades. These facilities include rustic campgrounds designed to function as major trailheads and trails designed to connect existing campgrounds with loop trail areas. Alternatives A and E propose the highest level of new hiking trails. No ORV trails would be built under Alternative A and no new developments would be provided on the Allegheny Reservoir.

Recreation activities which would be emphasized are backpacking, hiking, remote fishing and hunting, and primitive camping. These activites would occur in the Wilderness Areas and other large areas of low road density that provide solitude and a natural-appearing environment. This alternative would increase total recreational use from 19 to 27 million recreation visitor days (MMRVD's) by the fifth decade.

Alternative B

This alternative would maintain present recreation facilities and opportunities. Alternatives B and D have similar levels of ORV trail construction. This level is less than Alternative E and more than Alternatives A and C. The amount of hiking trail construction is very low, being only 11 miles in 50 years. Only Alternative C has fewer hiking trails proposed. Recreation use would increase from 19 to 20 MMRVD's by the fifth decade.

Alternative C

This alternative would provide a high amount of developed recreation opportunities, such as camping, swimming, driving for pleasure, picnicking, boating, and canoeing. These new opportunities would be provided by expanding 1) Dewdrop, Webbs Ferry, and Willow Bay on the Allegheny Reservoir, 2) constructing new campground complexes on the Allegheny River, Clarion River, and Tionesta Creek, and 3) leasing two resorts on the Allegheny Reservoir. Construction of these new facilities would be evenly spaced over the first four decades, and would double present developed and water recreation use by the fifth decade.

During the same period, however, primitive dispersed activities, such as backpacking and remote fishing and hunting, would decrease to about one-third of their present levels. This alternative has only three miles of new hiking trails proposed, the lowest amount of all alternatives. ORV trail construction is the fourth lowest after Alternative A, which has no proposed ORV trails.

Alternative D

This alternative would provide increased opportunities in both the developed areas around the Allegheny Reservoir and major waterways, and in the more remote and less utilized interior portion of the Forest. Recreational use would increase from 19 to 26 MMRVD's by the fifth decade.

Existing facilities at Dewdrop and Willow Bay would be expanded. Four new campground complexes with beaches and boat launches would be constructed on the Clarion River, Allegheny River, and Tionesta Creek to support increased use along these water corridors. A new motel/restaurant complex would be constructed adjacent to the Allegheny Reservoir Marina. Under Alternative D, 171 miles of new hiking trails

would be constructed, second only to the 280 miles proposed in Alternatives A and E. The level of ORV trail construction is greater than proposed in Alternatives A and C, the same as Alternative B, and less than Alternative E.

Under Alternative D, 20,000 acres would be managed to provide semi-primitive opportunities for hiking, hunting, fishing, and backpacking, in addition to the 10,000 acres in the Wilderness Areas. Additional pedestrian trails, parking areas, and small rustic campgrounds would be provided in these areas to support a projected six-fold increase in this type of recreation use by the fifth decade.

Alternative E

Alternative E, like Alternative D, would provide increased opportunities both in developed areas on the reservoir and river corridors and in the more remote interior portion of the Forest. The intensity of development, however, would be substantially higher under Alternative E, with total recreation use increasing from 19 to 37 MM RVD's by the fifth decade.

On the Allegheny Reservoir, Webbs Ferry Boat Launch would be expanded into a 200-site developed complex. In the third through fifth decades, a paved scenic highway would be constructed from Webbs Ferry to the Kinzua Dam, with a resort complex containing cabins, restaurants, and motel facilities at Hodge Run.

Five new campground complexes would be built in the first four decades along the Allegheny River, Clarion River, and Tionesta Creek to support and accommodate increased use along these waterways. As a result of these new developments, water uses such as boating, waterskiing, boat fishing, and canoeing would double, and developed site uses such as camping, swimming, and picnicking would triple by the fifth decade.

New trails and rustic trailhead campground would provide new opportunites for backpacking, rustic camping, ORV riding, hunting, and fishing in large areas with low road density. This alternative has the most trails proposed of all alternatives.

Effects of High Oil and Gas Demand on Alternatives

Total recreation use would decline by nine percent for Alternative D as a result of the high demand scenario. This decline is due to reductions in dispersed recreation opportunities. Intensive development may affect these opportunities in several ways. First, existing low road density areas may be converted into areas of high road density. Secondly, areas offering a natural appearance may be transformed into a heavily disturbed mosaic of woods, vegetated openings, and clearing occupied by roads and other support facilities. Such conditions are not generally compatible with dispersed recreation. As a result, the level of hiking trail construction proposed in variation D2 is 20 percent lower than under Alternative D. No decrease in ORV trail construction is expected, however, because this type of trail use is generally more compatible with oil and gas development than is hiking. No decline in developed recreation opportunities would occur as a result of high oil and gas demand.

Considering the above discussion, Alternative A would show the greatest decline in recreation opportunity as a result of high oil and gas demand. It emphasizes dispersed recreation management on large areas with low road density. Alternatives B and D have similar emphases on dispersed recreation, so effects of high demand on Alternative B would be as described above for Alternative D. Alternatives C and E would be least affected since their emphasis is on timber and developed recreation.

PLANS AND PROGRAMS OF OTHER AGENCIES

- Local county governments receive payments from the federal government based on the amount of National Forest land within the county and the amount of revenues generated from that land. Revenues are generated from timber sales, fees at developed recreation sites, fees from special use permits, and royalties from leasing federal minerals.

- Payments to counties under any alternative would primarily reflect the amount and value of timber harvested, the level of recreation site development, and the amount of land withdrawn from revenue-producing activities, such as wilderness areas.

Table 4-28 Payments to Counties (Warren, McKean, Elk, and Forest) from 25% Fund and Payments-in-Lieu-of Taxes (PILT) for decades one through five
(Million Dollars)

	Alternative					
	A	B	C	D	(D2)	E
Total Payments to 4-Counties	75	83	119	128	(120)	104

Present condition - $17.4 million/decade

PRIVATE PROPERTY RIGHTS

The cumulative effect on private property rights is a result of both energy mineral and mineral material development.

Energy mineral development is the exercise of these private rights. Oil and gas production is the economic return on the subsurface investment. Production figures projected into the fifth decade are displayed in Figure 4-10.

Mineral material development impacts the exercise of private property rights by minimizing the haul distance from the rock pit to the project site. (See Section 4.C., the discussion about the effects of the road construction management practice on mineral materials (Page 4-34) and see Figure 4-11 (Page 4-69) for a display of rock consumption through the fifth decade.

SOCIAL AND ECONOMIC EFFECTS

Social and economic effects of the forest plan alternatives can be placed into two categories: 1) effects on the local economy and 2) lifestyle changes on social groups.

Effects on the Local Economy

Anticipated effects on the local economy were estimated using an input/output economic model called IMPLAN. A detailed description of the IMPLAN model and the economic effects of the alternatives are provided in the "Effects on the Local Economy" section of Appendix B of this document (beginning on page B-106). The state-of-the-art in techniques for estimating the effects on the local economy do not allow accurate estimation of results. Results displayed below should be used only for comparing alternatives.

In each Forest Plan alternative, the Allegheny National Forest accounts for approximately five percent of the employment in the four-county area (Warren, McKean, Forest, and Elk). Table 4-29 displays the estimated number of jobs associated with each plan alternative in the first ten years of the Forest Plan.

Table 4-29 Estimated Number of Jobs Associated with Each Forest Plan Alternative
(Number of Jobs)

Sector of Four-County Economy	Alternative				
	A	B	C	D	E
Forest Products	272	433	751	485	525
Rec/Tourism	832	696	734	805	867
TOTAL all Sectors	2,399	2,356	2,955	2,654	2,897

Alternative A

Alternative A ranks fourth in total jobs, but second highest in the recreation/tourism sector. The alternative ranks lowest in job production in the forest products sector because of the low timber harvests.

Alternative B

Alternative B, the Current Situation, offers the fewest number of jobs attributable to the Allegheny National Forest. It offers the fewest in the recreation/tourism sector, but significantly more than Alternative A in the forest products sector.

Alternative C

Because of the timber outputs and emphasis on the more developed forms of recreation, Alternative C would likely account for the most jobs in the four-county area. The employment would be nearly equal between the forest products and recreation/tourism sector. Significant increases over the current situation can be expected.

Alternative D

Alternative D ranks third highest in total jobs associated with the Allegheny National Forest. The alternative offers more jobs than Alternative C in the recreation/tourism sector, but significantly fewer jobs in the forest products sector. Forest products sector jobs would still be higher than the current situation, indicated in Alternative B.

Alternative E

Alternative E would provide nearly as many total jobs as Alternative C, but the ratio between sectors changes. Alternative E offers fewer jobs than C in the forest products sector, but significantly more in the recreation/ tourism sector.

No significant changes in the social environment are anticipated from any of the plan alternatives except those associated with employment discussed above.

Effects on Lifestyles

The interdisciplinary team has reviewed the cumulative effects of management practices in each alternative and determined that any social group's lifestyle would not be significantly impacted by implementing any of the Forest Plan alternatives.

E. MITIGATION COMMON TO ALL ALTERNATIVES

This section discusses the mitigation provided by the standards and guidelines. Forest-wide and management area standards and guidelines, found in Chapter 4 of the Forest Plan, incorporate mitigation measures and are an integral part of all alternatives. Standards and guidelines must be followed when implementing the preferred alternative (the Forest Plan) or if any of the other alternatives were implemented. Exceptions will be permitted only by amendment of the Forest Plan or when a separate environmental analysis shows a particular measure would not be effective in a given situation.

The standards and guidelines were developed to address public issues and management concerns identified during scoping (See Appendix A). Standards and guidelines were revised in response to public and agency comments on the draft Forest Plan. They are consistent with the management direction provided in Chapter 3 of the Regional Guide for the Eastern Region (9/83).

In this section, mitigation of the effects of management practices are discussed for each environmental element displayed in Table 4-2. First, the management practices that affect an element, identified with an 'S' or 'M' in Table 4-2, are listed. Secondly, the effects that are mitigated are described. Effects that are significant were described in Sections C and D of this chapter. Thirdly, the mitigation measures themselves are described. And, finally, a reference list is provided which locates mitigation measures by page number in the Forest Plan.

It should be noted that mitigation measures are used to avoid, reduce, or compensate for the environmental effects created by all management practices, other than those that have no effects or insignificant effects on particular elements. However, some effects can be mitigated sufficiently so that they become insignificant. Others remain significant even after mitigation measures are applied - these are the effects which have been discussed in detail in Sections C and D of this chapter.

Soils and Landform

The practices of developed recreation site management, dispersed recreation management, herbicide use, and non-structural and structural wildlife habitat improvement have effects that are mitigated by Standards and Guidelines. The practices of even-aged and uneven-aged silviculture, road construction, and energy mineral and

mineral material development have effects that cannot be entirely mitigated by Standards and Guidelines. These effects are described in Sections C and D of this chapter.

A small surface area would be removed from vegetative production in developed recreation sites due to parking lots and other facilities. Loss of soil productivity due to compaction may occur around heavily used facilities. In dispersed recreation management, soils would be affected by concentrated use on trails, particularly off-road vehicle trails. Effects include erosion, soil compaction, and possibly the alteration of landform.

Effects of herbicide on soil would depend on the characteristics of the herbicide used. For the current herbicide of choice, the Roundup formulation of glyphosate, the effects are those described in the follow paragraphs.

The strong tendency of glyphosate to adsorb to soil particles influences its potential for leaching, runoff, and degradation by soil microorganisms. These latter three factors, in turn, determine the rate of glyphosate's dissipation from soil.

Glyphosate begins adsorbing to soil particles immediately after application, and with particular rapidity to kaolinite, illite, and bentonite clays as well as muck. Soil phosphate levels primarily determine the amount adsorbed (Sprankle, et al. 1975a). On the Allegheny National Forest, the principal clay minerals are illite and kaolinite. Soil phosphate levels are in the range of one to two pounds per acre. Under these conditions, the rate of adsorption of glyphosate to soil particles would be in the most rapid range possible for glyphosate.

In soil, glyphosate resists chemical and sunlight degradation, is relatively nonleachable, has low runoff tendency, negligible volatility, and minimal effect on soil microflora (Rueppel, et al. 1977; Weed Science Society of America 1983). The relative immobility results from the strong adsorption of glyphosate by soil particles. This adsorption is also the initial stage in inactivating glyphosate with respect to plant uptake because the adsorbed glyphosate is unavailable for uptake by plant roots.

Soil microbes completely and rapidly degrade glyphosate (Moshier and Penner, 1978; Rueppel, et al. 1977). In soil or water, the products of glyphosate degradation are carbon

dioxide, nitrogen, phosphate, and water. Several studies have shown that glyphosate does not adversely affect soil microorganisms or their metabolic process (Muller, et al., 1981; Sacher, 1978).

The above characteristics of glyphosate result in the herbicide dissipating relatively rapidly in most soils. Greenhouse studies indicate that the half-life of glyphosate ranges from three days in a silty clay loam with six percent organic content to 30 days in a sandy loam with one percent organic content (Rueppel, et al., 1977). One field study indicated an average half-life of two months in 11 soils. Other studies reported half-lives of 17 to 19 weeks in sandy soil and three weeks in silt loams (U.S. Environmental Protection Agency data reported in Ghassemi, et al., 1981). Soils on the Allegheny National Forest are mainly silt loams, loams, and silty clay loams in the upper 12 inches, the zone most affected by herbicides. Organic matter ranges from 0.5 to 4 percent. Under these conditions, the half-life of glyphosate would be approximately four to six weeks.

Vegetation management for wildlife habitat improvement would displace leaf litter, cause short-term accelerated erosion, and cause soil compaction due to heavy equipment use. Construction of impoundments or potholes affects productivity of surface vegetation when the areas are flooded. The area in impoundments and potholes may be minor compared to the Forest as a whole, but a high proportion of specific ecosystems, such as poorly-drained areas on bottomland and plateaus, may be affected.

Appropriate mitigating measures that reduce or eliminate the effects described above include erosion and sediment control during construction of developed recreation sites and trails; rehabilitation of recreation sites; trail maintenance; selecting herbicides with minimal effects on soil; and evaluation of resource impacts of impoundment construction.

Mitigating measures for practices with significant effects on soil include restricting the area with soil disturbance in timber sales; using logging systems appropriate for the soil conditions; using seasonal logging restrictions; erosion and sediment control during and after road construction; erosion and sediment control in oil and gas developments and in stone pits; pit development techniques.

The measures discussed above are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Recreation site const.(rehabilitation)	4-22,23,25
Trail construction & maintenance	4-7-9,22,23,25
Type of herbicide & use	4-7,17,24-25,39
Erosion control	4-20,27,6
Controlling loss of productivity	4-30,34,33,45-46,12,20-23
Timber sale layout	4-16,21-24
Logging systems	4-22,11-12
Seasonal logging restrictions	4-22-23,12
Road const. techniques	4-22-23,26
Energy const. techniques	4-22-23,27,20, 28,44-45
Containment of drilling fluids	4-22-23,21,28
Mineral materials development	4-26,20,27

Energy Minerals and Mineral Materials

The management practices of roads, energy mineral and mineral material development, and wilderness management can all affect the energy mineral and mineral material resources. Significant effects, which are not entirely mitigated by the Standards and Guidelines, are addressed previously in sections C and D of this chapter.

The following mitigation measures which address the management practices of roads, energy mineral and mineral material development, have both positive and negative effects on the two resources. The measures include the use of National Forest roads to access oil/gas leases, exploration and production guidelines for Federal and private mineral rights, and the allocation of rock for roads and well sites.

Mitigation Measures	Plan Pages
Use of National Forest roads	4-45
Exploration/development of Federal minerals	4-42
Private mineral development	4-43
Allocation of rock material from NF land	4-46

There are no mitigation measures to reduce the impact of wilderness management on the energy mineral resource. However, measures are provided to protect wilderness values from private development.

Visual Resources

Most of the management practices affect the visual resource by introducing evidence of human disturbance such as roads, campsites and buildings in recreation areas, and trails and parking areas in dispersed recreation areas. Timber sale landings, skid trails, and thinned canopies will be evident from timber management. Some wildlife structures such as fences and gates provide evidence of human disturbance. Gravel pits are evident because of the changed landform and open canopy.

The effects of management activities can be mitigated by following measures included in the standards and guidelines such as: proper location and design of activities and structures, screening, shape and size of project areas, timing of activities, residue treatment, using earthtone colors, and using native species and materials.

These mitigation measures will maintain, protect, or enhance visual quality, as defined by visual quality objectives, for developed and dispersed recreation management, uneven-aged silviculture, structural wildlife habitat management, and minerals management.

Many of these mitigation measures are also included in the discussions of mitigation measures for recreation and wildlife. The list below only includes those measures in the Forest Plan directly affecting visual resources.

Mitigation Measures	Plan Pages
Vegetative management	4-6,62,73,85,99,113, 128,153,172
Visual Quality objectives	4-11,63,75,87,102,115, 130,143,155,164,173,183
Harvest cutting methods	4-12,15,63,76,87,116,131, 143,155,165
Herbicide	4-17,141,182
Openings	4-30,64,76,78,87,116, 131,143,155
Special use management	4-40,103,122,135,146,157, 166,174

Mitigation Measures	Plan Pages
Minerals management	4-42,104,122,136,147,157-159,166,174,178
Signs and posters	4-51,108
Road construction & mgmt.	4-52-53,68-69,80,95,123,148,160,168,176,179,185

Cultural Resources

Many of the management practices disturb the ground surface sufficiently to damage or destroy cultural resource sites. These effects are mitigated by avoiding the sites when applying the practices, by removing and preserving cultural resources in accordance with existing laws and regulations, or by evaluating and excavating the site before it is disturbed.

The measures discussed above are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Cultural Resources Mgmt.	4-10,63,75,86,101,113,130,142,154,164,173,183

Water Quality

The effects of recreation, herbicide use, and fertilization on water quality are mitigated by standards and guidelines. These effects are discussed below. Timber management, road construction, and energy mineral development have effects on water quality that are not entirely mitigated by standards and guidelines. These significant effects are described in earlier sections of this chapter.

Construction of recreation facilities can cause short-term erosion and sedimentation. Off-road vehicle (ORV) trails, as well as illegal ORV use, can create erosion and sedimentation problems. Construction and use of off-road vehicle trails create a condition of constant soil exposure. As the exposed soil is subjected to rainfall, erosion and runoff occur. The transport of eroded soil as sediment into streams, ponds, and lakes can cause deteriorated water quality.

In aquatic systems, the herbicide glyphosate strongly adsorbs to both organic and mineral matter and is degraded to carbon dioxide, nitrogen, phosphate, and water, primarily

by microorganisms (Ghassemi, et al., 1981). The rate of degradation is slower than for soils because water contains fewer microorganisms than soil. Studies indicate half-lives for glyphosate in natural water bodies of seven weeks in Sphagnum bogs at pH 4.23; of nine weeks in cattail swamps at pH 6.25; and of ten weeks in pond water at pH 7.33 (U.S. Environmental Protection Agency data reported in Ghassemi, et al., 1981). Sacher (1978) reported a half-life of 12 days in a pond in Florida.

Fertilization can affect water quality by increasing the concentration of nitrogen in streams on a short-term basis. Nitrogen in the form of nitrite does not move freely through soil or enter streams following fertilization. Nitrogen in the form of nitrate does move freely with runoff and, thus, has the potential to enter streams. The only potential adverse effect of nitrate is to some infants under three months of age who drink water containing nitrate in concentrations of 10 mg/l or greater. Water quality standards generally restrict nitrate concentration to less than 10 mg/l for this reason. However, EPA does not recommend any restriction on nitrate concentration for the purpose of protecting aquatic life. On the Allegheny NF, monitoring water quality of streams before, during, and after fertilization indicates that nitrate concentrations do transiently exceed 10 mg/l on a very infrequent basis. Although the drinking water standard may occasionally be exceeded following fertilization projects, it is unlikely that water from such streams would be fed to infants under three months old.

Mitigation measures that reduce sediment production from timber harvesting include using erosion and sediment control practices on short-term facilities, such as restricting the grade of skid trails and temporary roads, providing adequate cross-drainage, and stabilizing facilities after use; limiting the area in landings and skid trails; maintaining filter strips between disturbed soil and streams; limiting the number of stream crossings; and limiting the area of a watershed which receives a final harvest cut at one time.

Mitigation measures that reduce effects from herbicide and fertilizer application include maintaining buffer strips along streams and other water bodies where no chemical is applied and selecting herbicides which have low toxicity and degrade rapidly to nontoxic compounds.

Mitigation measures that reduce sediment production from construction and use of permanent roads include establishing

filter strips between roads and streams; providing adequate cross-drainage; eliminating the direct discharge of ditch water into streams; restricting vehicle use; and stabilizing cut and fill slopes.

Mitigation measures that reduce water quality impacts from oil and gas development, in addition to the measures described above for permanent roads, include burying oil pipelines; limiting the size of well sites; plugging abandoned wells; lining wastewater pits; and complying with federal and state water pollution regulations.

Mitigation measures that reduce water quality impacts from recreation activities include restricting and controlling the use of ORVs; using erosion and sediment control practices on off-road vehicle (ORV) trails and recreation sites; locating recreation developments properly; and restoring and stabilizing areas damaged by heavy recreation use.

Mitigation Measure	Plan Pages
Erosion/sediment control on short-term facilities	4-23-24
Area in landings and skid trails	4-21-23
Stream crossings	4-24
Area clearcut at one time	4-12,64,87,116,131, 155
Buffer strips during chemical use	4-24-25
Herbicide selection	4-17-18
Erosion/sediment control on permanent roads	
National Forest roads	4-26-27
Private oil and gas roads	4-27-28
Burying oil pipelines	4-28
Plugging abandoned wells	4-44
Lining wastewater pits	4-21-23
Complying with water pollution regulations	4-28
Restricting ORV use	4-9-10
Erosion/sediment control on recreation facilities	4-25
Locating recreation developments	4-62,73,85,113,128, 163
Rehabilitating areas with heavy use	4-20,165

Mitigation Common To All Alternatives

Roads

The practices of developed and dispersed recreation management have effects on roads that are mitigated by standards and guidelines. Adverse impacts on roads from timber harvesting, oil and gas development, and mineral materials are also mitigated.

The adverse effect of management practices on roads is usually damage to the road surface caused by inappropriate use. For example, recreational vehicles such as motor homes and trailers can create ruts and break down the road surface if roads into developed recreation sites are not designed for such traffic. Hunters and anglers can also damage gravel-surfaced roads by driving on roads that are saturated from heavy rains or snowmelt. Likewise, heavy truck traffic from timber harvesting or oil and gas development can damage roads that are not built to handle such traffic.

Adverse impacts to roads can be mitigated by designing, building, and managing roads for the anticipated traffic. The Traffic Service Level system, described on Page 3-12 of this EIS, systematically links road design standards to the traffic use needed to meet resource management objectives. Direction on applying Traffic Service Levels to meet management area objectives is provided in the 7700 section of the Standards and Guidelines.

Mitigation Measure	Plan Pages
Traffic Service Levels	3-12

Riparian Areas

The management practices of developed and dispersed recreation, even-aged and uneven-aged silviculture, herbicide and fertilizer application, road construction, and wilderness management may have effects on riparian areas, but such effects are mitigated by Standards and Guidelines in the Forest Plan. The practices of roads and energy mineral development have negative effects on riparian areas that cannot be entirely mitigated by Standards and Guidelines.

Development recreation sites located in floodplains may change flow patterns, such as constricting floodflows and increasing flow velocity with resultant channel and bank

erosion. Recreation sites may also be sources of point and nonpoint pollutants to water bodies, such as wastewater from sewage treatment plants, septic fields, and sediment during construction or from areas of bare and compacted soil. Dispersed recreation and wilderness use affect riparian areas when excessive human use of sensitive streamside or lakeside areas damages or destroys riparian resources and values, such as wildlife habitat or the sediment filtering ability of the forest floor in riparian areas.

Mitigation measures to reduce recreation impacts on riparian areas include locating recreation sites appropriately in floodplains; using erosion and sediment control practices at recreation facilities; complying with water pollution control regulations on sewage discharges; restoring damaged riparian areas and controlling use to prevent future damage.

Timber management can affect riparian areas by removing excessive amounts of streamside vegetation, resulting in increases in stream temperature; removing or altering wildlife habitat; disturbing soil by constructing landings and skid trails in riparian areas; and affecting aquatic life by the use of chemicals.

Mitigation measures to reduce timber management impacts on riparian areas include limiting the amount of streamside vegetation removal; using uneven-aged silviculture; protecting and managing riparian wildlife habitat; locating landings and skid trails outside of riparian areas; using buffer strips to prevent entry of chemicals into water bodies.

Locating roads in riparian areas can alter floodplain functioning; remove riparian wildlife habitat; lower visual quality in streamside areas; change recreation opportunities along streams. Bridges and culverts can alter stream flow and impede fish movement.

Mitigation measures to reduce the impact of roads on riparian areas include locating new roads outside of riparian areas; minimizing the number of stream crossings; designing stream crossing structures such that streamflow patterns are not altered and fish passage is not impeded.

The impacts of energy mineral development on riparian resources can be lessened by locating facilities outside of riparian areas; using erosion and sediment control practices; disposing of wastewater in accordance with

federal and state regulations; implementing measures to prevent oil spills. A recently passed state law (Oil and Gas Act of 1984, Act 223) requires well sites to be located 100 horizontal feet away from streams marked on USGS topographic maps. This requirement will mitigate some of the impacts of oil and gas development on riparian areas.

For all practices, the most important mitigation measure protecting riparian values is to give preferential consideration to riparian-dependent resources when an unresolvable conflict exists with the management of other resources.

Mitigation Measures	Plan Pages
Facility location in floodplains	4-20
Erosion/sediment control	4-21-29
Water pollution control regulations	4-52
Controlling human use in riparian areas	4-19,100,102,156
Retaining streamside vegetation	4-24
Uneven-aged silviculture in riparian areas	4-64,87,131,143
Locating facilities outside riparian areas	4-20,145
Buffer strips	4-24-25
Stream crossings	4-24-26
Oil spill prevention	4-28-29
Preferential consideration	4-19

Vegetation

The standards and guidelines in the Forest Plan may not fully mitigate those management practices which have the potential to cause significant change in the quality and quantity of the forest vegetation. The effect those practices would cause are discussed in previous sections of this chapter.

The variety of timber types on the Forest requires the designation of silvicultural and harvesting practices applicable to each type. Such practices can greatly influence the species composition and abundance of vegetation in a given area. Standards and guidelines related to silvicultural systems which would apply throughout the life of a stand are provided for each timber type in each management area.

Wildlife habitat management standards and guidelines provide direction on species of vegetation to emphasize and management strategies to consider in habitat development, improvement, and maintenance. Subjects, such as old growth representation, age-class distribution, introduction of non-native or exotic vegetation, snag trees, food/browse, and cover are addrssed for the applicable management areas.

Other management actions which affect vegetation are research on the Kane Experimental Forest, firewood removal, Integrated Pest Management, pesticide use, and protection of unique plant communities. They are also addressed in the standards and guidelines.

Standards and guidelines which affect vegetation and would continue toward mitigation are stated in the Forest Plan as follows:

Subject Heading	Plan Page(s)
Vegetative Management	4-6,14,62,73,85,99,113, 128,141,153,172,182
Pesticide Use	4-7,141,182
Integrated Pest Management	4-47-48,49
Timber Management	4-102,183
Silvicultural Systems	4-64,75,87,116,131, 143,155,165,173
Harvest Cutting Methods	4-11,64,87,116,131,143
Temporary Openings Created by the Application of Even-aged Silviculture	4-12,64,76,87,116,131,143, 155
Reforestation	4-16-18,118,156,165
Pulpwood and Firewood	4-15
Timber Stand Improvement	4-19,118,145,165
Wildlife Management	4-29,65,77,90,103,118,133, 145,156,166,174,184
Forest Species of Concern	4-36
Federal Minerals	4-42
Private Minerals	4-42,104,159
Coordination of Water Resource with Timber Management (herbicide)	4-23
Research	4-177-179
Unique Plan Communities (Vegetative Management)	4-6

Mitigation Common To All Alternatives

Wildlife

The practices of dispersed recreation management and herbicide use have effects on wildlife which are mitigated by standards and guidelines. The practices of timber management, road construction, and energy mineral development can have significant effects on wildlife which cannot be entirely mitigated.

Management of dispersed recreation use of roads and trails controls and distributes human activity on the forest. Human activity can have a positive or negative effect on wildlife populations, depending on the amount, the location, and time of year. For example, focusing hunting pressure in areas where deer populations exceed the carrying capacity of the habitat can have a beneficial effect on the health and strength of the remaining herd. Conversely, human disturbance of wildlife during nesting and young rearing seasons can have a detrimental effect on populations.

The potential effects of herbicide treatment on wildlife resources are related to the chemical used, the areas selected for treatment, and the plant species that occur on the treated site. The herbicide of choice at the present time, the Roundup formulation of glyphosate, has been evaluated for effects on wildlife.

The potential that wildlife would be exposed to glyphosate is low and exists only for a short time immediately after application. Roundup moves from the leaves to the roots within a few days. In soil and water, it rapidly adsorbs to particles and rapidly degrades. The low dose rates and low toxicity further reduce the hazard.
Glyphosate is generally nontoxic to a variety of organisms. The formulation of Roundup, however, is toxic to some animals. The surfactant added to increase glyphosate absorption by plants has higher toxicity than the herbicide itself (Folmar, et al., 1979).

Glyphosate has little tendency to concentrate in animals (Monsanto Company data cited in Ghassemi, et al., 1981). Glyphosate absorbs slowly across the gastrointestinal membranes. Vertebrates show minimal tissue retention and rapid elimination of residues (Monsanto Company, 1982). Bobwhite quail store no glyphosate in muscle or fat, although traces appear in liver and kidney tissue (U.S. Department of Agriculture, 1981). Folmar, et al. (1979) found no glyphosate or Roundup residues in midge larvae exposed to either substance.

Glyphosate has low toxicity for birds. Eggs immersed in Roundup hatched normally (Batt, et al., 1980). When ducks and quail were fed glyphosate for eight days, the LD50 was greater than 4,640 parts per million (Monsanto Company, 1982a). Adult chickens were fed daily a cumulative dose of 15,000 milligrams glyphosate per kilogram of body weight. No behavorial or microscopic changes related to treatment were observed (Monsanto Company, 1982a).

Since almost all of the data on glyphosate are proprietary, the open literature has very few published reports on the toxicity of glyphosate in mammals. The U.S. Environmental Protection Agency has published these no-observable-effect levels for glyphosate:

- 90 day rat feeding, 2,000 parts per million (ppm)
- 90 day dog feeding, 2,000 ppm
- 18 month mouse feeding with no carcinogenic effect, 300 ppm
- 2 year rat feeding, 100 ppm
- 2 year dog feeding, 300 ppm

Mitigation measures that reduce the loss of wildlife production include: proper road and trail location; regulating public access when necessary to protect or manage wildlife populations effectively; protecting or enhancing key wildlife habitat components through timber harvesting or other wildlife habitat improvement treatments; revegetating temporary roads and other disturbed areas with plant species beneficial to wildlife; utilization of approved herbicides, and careful selection of areas to be treated with herbicides.

The mitigation measures discussed above are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Road and trail location	4-31,33,38-39,92-93,122, 135
Road and trail construction and management	4-31,33,37-38,40,53,66, 67,69,79,93,120-121,123-124,135,148,160,176,179
Timber harvesting	4-6,11-12,31-33,37-39, 62,64-67,73,75-76,78-79, 85,87,91-93,113,116-118, 120-121,128,131,134-135, 141,143,146,155-156

Mitigation Common To All Alternatives

Mitigation Measures	Plan Pages
Reforestation	4-17-19,37-38,66,73,78, 91,118-119,134,146,156-157
Wildlife habitat improvement	4-6,30-33,37-38,40,62, 65-67,73,77-79,85,90-93, 113,118-121,128,133-135, 141,145-146,156-157,174
Revegetation of disturbed areas	4-6,30,41,66,78,91,120, 134,146
Buffer zones	4-19,33,37-38,92,120
Herbicides	4-6-7,17-18,24-25,31,37-38,65,77,90,118,133,145, 156,166,174
Right-of-way management	4-6,37-41,45,65,77,90, 118,133,145,156,166,174

Fish

The practices of developed and dispersed recreation management, timber management, road construction, and herbicide use have effects on fish which are mitigated by standards and guidelines. The practices of structural fish habitat improvement and energy mineral development can have negative effects on fish populations which are not entirely mitigated by standards and guidelines.

Construction of developed recreation sites, roads, and trails can cause short-term erosion and sedimentation of water bodies. Recreation access to streams and impoundments can have negative or positive effects on fish populations, depending on the amount of use, its location, and when it occurs.

Glyphosate alone is slightly toxic to fish. Roundup with its surfactant is generally toxic to fish (Folmar, et al., 1979; U.S. Department of Agriculture, 1981). Although toxic levels are unlikely to accumulate in water, Roundup should be considered harmful to some species of fish, including rainbow trout and bluegills which occur on the Allegheny National Forest (Folmar, et al. 1979).

Fish metabolism studies indicate an extremely low bioaccumulation of Roundup (Norris, 1981). Bluegills exposed to glyphosate accumulated residue in edible portions with a bioconcentration factor of 1.6 (U.S. Department of

Agriculture, 1981). Largemouth bass and rainbow trout exposed to 10 ppm for fourteen days had maximum residue levels of 0.12 and 0.11 ppm. respectively. In another test, rainbow trout exposed to glyphosate showed no detectable residues, but trout exposed to Roundup had glyphosate in fillets and eggs (Folmar, et al., 1979).

Wind speed during application, topography, and proximity to streams influence the amount and likelihood of stream contamination.

Constructing impoundments for fish habitat improvement would change free-flowing streams to lakes. The impoundment would trap sediment, which initially reduces sediment downstream. However, downstream sediment will eventually increase due to bank and channel erosion. Downstream water temperature may also increase due to warming of the water in the impoundment.

Mitigation measures that reduce the loss of fisheries production include: proper location of developed recreation sites, roads and trails; revegetation of disturbed areas; regulating public access to manage fish populations effectively and reduce sedimentation; seasonal logging restrictions; using both buffer and filter strips where necessary; utilization of approved herbicides; dam design; adding water bars to skid trails and temporary haul roads; plugging abandoned wells; proper construction and locations of containment pits at well locations; and providing bridges, culverts, or pipes at stream crossings.

The mitigation measures discussed above are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Location of developed recreation sites, roads, and trails	4-19-20,22-27,34,45,62, 73,85,102,113,128,141, 145,154,156,163
Revegetation of disturbed areas	4-6,19-20,27-28,33-34, 41,44,66,69,78,80,91, 95,120,123,134,137,146, 148,165,168,176,186
Road and trail construction and management	4-9,11,22-28,34,44-45, 53,67,69,79,80-81,93, 95,121-124,135-137,146-148,156,160,176,179, 185-186

Mitigation Measures	Plan Pages
Seasonal & equipment logging restrictions	4-12,22-24,64,87
Stream crossings	4-24-27,67,79,93,122, 135,146
Buffer zones & filter strips	4-24-27
Herbicides	4-7,24-25
Dam design	4-34-35
Water bars	4-23,25-27
Plugging wells	4-20,44,102
Containment pits	4-21-23,28

Threatened, Endangered and Species of Special Concern

The effects of all management practices on threatened and endangered species and on species of special concern are mitigated by standards and guidelines, with one exception. The exception is that the effects of energy mineral development on species of concern are not entirely mitigated by standards and guidelines. (See Chapter 4, Page 4-53 for more information).

Management practices have the potential to adversely affect the habitat of these species, resulting in reduced population densities. Activities which can cause adverse effects include disturbances during the nesting season, elimination or degradation of specific habitat, and human intrusion into hibernacular and denning locations during critical times of the year.

Mitigation measures that reduce the loss of production for these species include: proper location of developed recreation sites, roads, trails, timber cutting units, herbicide treatment areas, wildlife and fish habitat improvement projects, reforestation projects, and minerals materials development sites; regulating public access and other management practices during critical time periods; acquiring lands or rights to provide necessary protection; and enhancing existing habitat and creating new habitat in desirable locations.

The mitigation measures discussed above are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Location of developed recreation sites, roads, trails, timber cutting units, herbicide treatment areas, wildlife and fish habitat improvement projects, reforestation projects, and minerals development sites.	4-37-40
Road and trail management	4-38-40,44
Seasonal management restrictions	4-38,40
Acquisition of lands or rights	4-37,51
Habitat improvement	4-37-38

Recreation Opportunities

Most of the management practices affect recreation opportunities by changing the recreation setting, displacing recreation uses to other areas, introducing evidence of human disturbance, or encouraging new recreation activities or use areas. When these effects are negative (not consistent with the management area objectives), they are mitigated by the standards and guidelines. These mitigation measures include: Forest pest management, information services, vegetative management, law enforcement, land ownership, road management, proper location and design of activities and structures, screening, shape and size of project areas, timing of activities, residue treatment, using earth-tone colors, and using native species and materials.

Many of the measures discussed above are included in the discussions of mitigation measures for visual resources and wildlife, since both of these resources have recreation opportunities as their ultimate output. The list below only includes those measures found in the Forest Plan which directly affect recreation opportunities.

Mitigation Measures	Plan Pages
Forest pest management	4-49
Information services	4-5
Vegetative management	4-6,62,73,85,99,113,128, 153,172
Recreation management	4-7-10,62,73,85,100,113, 128,141,153,163,172,177, 182
Harvest cutting methods	4-12,15,64,87,116,131,143, 155,165,173

Mitigation Common To All Alternatives

Mitigation Measures	Plan Pages
Minerals management	4-42,104,122,136,147,157-159,166,174,178
Law Enforcement	4-50
Road Construction and Management	4-52,68-69,80,95,123,148,160,168,176,185

Wilderness

The management practices of energy minerals and wilderness management have an effect on the wilderness resource.

Private mineral development in the wilderness would affect the wilderness character by introducing evidence of human disturbance in the form of roads, well sites, pipelines, and tank batteries. The vehicle activity and noise associated with this development would also affect the area surrounding the mineral development area.

Wilderness management would have an effect on the wilderness character by introducing evidence of human disturbance. This includes structures such as trails, signs, campsites, and tent pads, and activities such as revegetation of disturbed areas, fire control, and construction and maintenance of recreation facilities.

The effects of private mineral development can be mitigated by purchasing the mineral rights on a willing seller basis, thereby withdrawing the minerals from development. If development of private minerals occurs, impacts would be mitigated as much as possible through siting, vegetative screening, using earth-tone colors, minimum clearing, burying all utility and pipelines, using electric motors to pump wells, and locating facilities outside the areas if possible.

The effects of wilderness management would be mitigated by using primitive materials and techniques, and locating as many activities as possible outside the areas.

These mitigation measures are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Minerals management	4-42,104
Wilderness management	4-99-109

Special Recreation Designations

The areas included in special recreation designations are federal and state scenic river study corridors, Allegheny National Recreation Area, Hearts Content Scenic Area, and Tionesta Scenic Area. Management practices which have an effect on these areas are developed recreation, even-aged silviculture, roads, energy minerals, and mineral materials. These practices introduce evidence of human disturbance, displace recreation uses, or disrupt the primitive setting. These effects are mitigated primarily by proper design and location of activities but also by screening, shape and size of project areas, timing of activities, road management, using earth-tone colors, and using native species and materials.

These measures are found in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Vegetative management	4-113,153,172
Recreation management	4-113,153,172
Visual quality	4-115,155,173
Timber management	4-116,155,173
Minerals management	4-122,157,174
Road management	4-123,160,176

Plans and Programs of Other Agencies

Other federal, state, or local agencies have plans or programs for the same resources addressed in the Allegheny National Forest Plan. Potential for conflicts and duplication of efforts could exist, if mitigation measures were not developed and identified in the Forest Plan.

Mitigation measures are stated in the Forest Plan as follows:

Mitigation Measures	Plan Pages
Air Quality	4-7,100
Pesticide Use	4-7
Off-Road Vehicles	4-9
Stocking Levels	4-14
Coordination of Water Resources with Transportation	4-26
Coordination of Water Resources with Oil/Gas Management	4-28
Wildlife Management	4-29,93,103,121
Wetland Impoundments and Potholes	4-32
Fish	4-34
Endangered, Threatened, & Forest Species of Concern	4-35-36,38-39
Special Use Management	4-40
Compliance with Regulatory Requirements of Other Agencies (Minerals & Geology).	4-46
Forest Pest Management	4-47
Fire Management	4-49,67,79,94, 122,136,147,160, 167,175
Law Enforcement	4-50
Solid Waste, Waste Water and Dams	4-52
Water Supply	4-68,80,95,123, 136,147,159,167, 175
Vegetative Management	4-178

Private Property Rights

The management practices of developed recreation management, dispersed recreation management, even and uneven-aged silviculture, and wilderness management can all affect the exercise of private subsurface rights. The standards and guidelines mitigate these effects. Effects from energy mineral and mineral material development were discussed previously in this chapter.

The effect on private rights from recreation sites occurs if the subsurface rights are acquired by the federal government, in order to protect recreation values. This effect is mitigated by paying fair market value for the property.

Effects from dispersed recreationists include vandalism and theft of oil and gas lease equipment. Mitigation measures include: notifying the public of private property rights, gating, and law enforcement.

The effects from timber management activities include damage to oil/gas facilities during logging and concurrent use of National Forest roads and lease roads. Mitigation measures to reduce these impacts include: burial of pipelines and electric lines, cooperative road use agreements for maintenance, and coordination of activities between timber operators and oil producers.

Wilderness management has a mitigated effect on private property ownership. Private subsurface rights are being acquired, but only on a willing seller basis, and for fair market value.

The measures discussed above are found in the Forest Plan, as follows:

Mitigation Measures	Plan Pages
Acquisition of private property	4-51
Gating of oil/gas lease roads	4-44
Law enforcement activities	4-46
Buried utility lines	4-46
Property acquisition requirements (Wilderness)	4-51

F. UNAVOIDABLE ADVERSE EFFECTS

Implementation of the preferred alternative or any of the other alternatives will result in some adverse environmental effects that cannot be avoided. However, the application of the forest-wide standards and guidelines is intended to limit the extent and duration of these effects to an acceptable level. The following is a summary of the unavoidable adverse effects described in more detail in the previous sections.

These effects include the following:

-- Increased erosion and sedimentation from soil disturbance due to roads. Effects from roads can be long-term, whereas effects from skid trails and landings are short-term.

-- Loss of soil productivity through loss of landform, the surface area in roads, energy mineral and mineral material development. Alternatively, soil compaction and soil displacement may lower but may not eliminate soil productivity in some areas.

-- Alteration of natural landforms and loss of overstory vegetation due to road construction, oil and gas development, and stone pit development.

-- Water quality degradation due to discharges of brine, oil spills, and increased sedimentation in streams from oil and gas developments.

-- Changes in visual quality, many of which are objectionable to observers, due to timber management, road construction, and oil and gas development.

-- Increased levels of noise in the vicinity of timber harvesting, recreation facilities, and oil and gas developments.

-- Disruption or displacement of some recreationists and wildlife species due to timber activities, road management, and oil and gas development.

-- Long-term changes in recreation opportunities and wildlife diversity, to which some people may object.

-- Increased amounts of old growth (older than 111 years) from present levels, which may be adverse to some people.



ONSHIP BETWEEN
TERM USES OF
IRONMENT
G-TERM
VITY

Management of the Allegheny National Forest under any alternative strives toward the "achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources . . . without impairment of the productivity of the land," as mandated by the Multiple Use-Sustained Yield Act of 1960. The minimum management requirements as well as the standards and guidelines contain direction designed to protect the long-term productivity of the various resources. The proposed alternatives signif
long-term forest

ENERGY MINERALS/ MINERAL MATERIAL RESOURCES	Short-term uses, such as use of developed recreation sites, wilderness, or National Recreation Areas, limit the ability to produce minerals now. However, these short-term uses have no long-term effect on the quality or quantity of the mineral resources themselves in any of the alternatives. Mineral production, of course, reduces the long-term productivity of the mineral resource since minerals are nonrenewable.
VISUAL RESOURCES	Timber havesting, well site clearing, rights of way, and rock pits have a short-term effect on visual quality through altering the natural overstory vegetation. However, through mitigation procedures and the fact that revegetation occurs rapidly, the long term productivity of the visual resource for any one of the alternatives is not impaired. Short-term uses such as road building, rock pits, and impoundments have the potential to affect the long-term productivity of the visual resource by altering natural landforms. Yet the amount of land affected in any one of the alternatives is less than 6 percent.
CULTURAL RESOURCES	Mitigation measures applied during the implementation of short-term uses protect the long-term productivity of cultural resources. By identifying and protecting these resources, they may be made more productive through interpretation for visitor education. These effects will be the same in all alternatives.
WATER QUALITY	Some short-term uses such as production of energy minerals, timber harvest, and road construction have a temporary effect on water quality by increasing sedimentation during facility construction. In some cases, water quality may be impaired over the long term due to chronic sediment and brine production from intensive oil and gas developments.
RIPARIAN AREAS	Long-term productivity of riparian-dependent resources is maintained in all alternatives by giving these resources preferential consideration in project planning. In some alternatives, long-term productivity of the aquatic ecosystem for fish will be improved by the construction of habitat improvement structures. Construction of impoundments will increase riparian areas associated with lakes, at

	the cost of a slight decrease in productivity of stream-associated riparian areas. Alternative A provides the greatest amount of fish habitat improvement and impoundment creation, followed by Alternatives E and D. Alternatives B and C maintain the existing riparian condition.
VEGETATION	Short-term uses, such as wildlife openings, new road building, rock pits, and oil and gas well development activities, affect long-term timber productivity by taking land out of production for timber. However, even after these are taken into account, the Forest can increase the total harvest volume over the short term above that presently harvested and still maintain that level of harvesting throughout the long term (see Table 4-6). Alternatives C, D, and E all produce higher sustained yields than the current situation (Alternative B). Other short-term uses, such as wilderness, semi-primitive recreation, and special areas, affect long-term sustained yield in an alternative by limiting timber production from certain areas. In this latter instance, however, long-term sustained yield could be increased by changing the assignment of land to management areas. So there is no effect on the site's inherent long-term ability to produce timber.
WILDLIFE, FISH, THREATENED AND ENDANGERED SPECIES	Short-term uses, such as timber harvesting, wildlife cuttings, and road building affect the amount and distribution of all species to one degree or another. Populations of some species may increase while others may decrease. All alternatives maintain minimum viable populations of all native wildlife, fish, and plant species and also provide a diversity of species over the long-term. Management of threatened, endangered, and sensitive species receives the same strong emphasis in all alternatives such that the long-term productivity for them will be maintained or improved.
RECREATION OPPORTUNITIES/WILDERNESS/ SPECIAL RECREATION DESIGNATIONS	The mix of recreation opportunities provided in each alternative is a result of the short-term uses chosen. Some uses, such as road building, timber harvesting, or oil and gas development, limit the long or short-term production of semi-primitive wilderness or scenic area recreation opportunities for that particular alternative. Conversely short-term uses, such as wilderness, semi-primitive areas,

and scenic areas, also limit the production of roaded natural or rural recreation opportunities (i.e., driving for pleasure, auto camping, ORV use). Given a particular alternative objective, the productivity of the recreation resource is maintained or improved over the long term. Productivity is maintained or even increased in different ways in all alternatives through recreation capital improvements and/or management standards and guidelines. Alternative C provides a substantial increase in rural developed recreation productivity through the addition of many recreation campgrounds and resorts. Through management direction, Alternative A provides substantial increases in productivity for semi-primitive recreation experiences. Alternatives B, D, and E provide different mixtures between A and C of recreation resource opportunities.

In summary, all alternatives provide a particular mix of recreation resources whose productivity will be maintained or improved over the long term.

H. IRRETRIEVABLE OR IRREVERSIBLE COMMITMENT OF RESOURCES

Irretrievable commitments of resources occur when we forego the opportunity to use or produce a specific resource for a period of time while favoring the production of another resource. Irreversible commitments of resources include (1) the extraction and use of non-renewable resources, such as minerals, and (2) the alteration of a renewable resource such that the resource will not return to its natural condition for a long period of time, on the order of 50 years or more. Standards and guidelines include measures to protect, as much as possible, those resources which could be adversely affected by other resource uses.

IRREVERSIBLE COMMITMENTS

Irreversible resource commitments are discussed in Sections C and D of this chapter and are summarized below by alternative.

Mineral Resources

Extraction of oil and gas

Figure 4-11 displays the amount of energy produced, measured in BBTU's, from the extraction of oil and gas beneath the Forest. This production will reduce the total amount of known reserves of oil and gas.

Extraction and use of mineral materials

Road construction and reconstruction associated with timber management and oil/gas production are the most important practices affecting the mineral material resource. This resource includes common varieties of fractured rock, stone, sand, or gravel. Figure 4-9 displays the volume of rock used for Forest Service and oil/gas projects over the next five decades. Each alternative involves a different volume of rock used, based on miles of road construction and maintenance. The ranking of volume of rock used in each alternative, from highest to lowest, is D, C, E, A, and B.

Use of fossil fuels in administration of the National Forest

Those alternatives with the highest amount of management activity cause higher consumption of fossil fuels. The amount of road construction and reconstruction in an alternative indicates the amount of road usage that management activities require. Output levels may not be as reliable; some outputs, although produced in similar amounts by two

alternatives, are produced over a larger acreage in one alternative than another. Figure 4-16 displays the amount of road construction and reconstruction by alternative. Rating the alternatives from highest road development to the lowest results in the following ranking: C, D, E, A, and B.

Soil Resource

The most significant irreversible effect on the soil resource is the amount of productive soil lost in each alternative. The area occupied by Forest Service roads and stone pits provides one good indicator of this effect (see Figure 4-7). Alternatives C has the highest acreage occupied by roads and stone pits, followed by Alternatives D, E, A, and B, in that order. Another good indicator is oil and gas land clearing for roads and well sites. This is a constant 2,129 acres for all alternatives over the next 50 years.

Visual Resources

Loss of natural landforms due to stone pits, cut-and-fill roads, construction on side slopes

This irreversible effect is difficult to evaluate between alternatives. The best indicator is the area occupied by roads and stone pits (see Figure 4-7). Alternatives which have more acres occupied by roads and stone pits have a higher potential for adverse effects on natural landforms. Therefore, Alternative C has the highest potential, followed by Alternatives D, E, A, and B.

Loss of continuous forest canopy due to road and pipeline rights-of-way

This relates most directly to the amount of high standard road construction and reconstruction (see Figure 4-16). Pipeline rights-of-way amounts are difficult to estimate. Alternative E has the highest potential for this type of visual resource loss followed by Alternatives C, A, D, and B.

Loss of natural forest landscape in oil/gas developments

All of the alternatives have the same amount of oil and gas development, however, those which have more acres devoted to management areas where the objective is to retain a natural-appearing landscape will have higher visual effects from this development. Oil and gas development will then have the greatest impact on the visual resource in Alternative A, followed by Alternatives E, B, D, and C.

Recreation

Loss of unroaded recreation opportunities after new road construction

This relates directly to the amount of each management area assigned in an alternative, particularly management areas 5 and 6.1 (see Table 2-10). Alternative A would have the most opportunity for unroaded recreation followed by Alternatives B, D, E, and C. Therefore, Alternative C has the highest potential for losing unroaded recreation opportunity, followed by Alternatives E, D, B, and A.

Loss of fishing opportunities in streams severely impacted by oil/gas development

Since all of the alternatives have the same amount of development and the same mitigation measures in the standards and guidelines, differences between alternatives relate primarily to the amount of fishing opportunity provided. Fishing opportunity in turn relates directly to fishing use (see Figures 4-28 and 4-29). For cold water fishing, therefore, Alternative A, which has the highest fishing use, has the most potential for fishing opportunity loss, followed by Alternatives D, E, B, and C.

Timber

Loss of timber production in areas committed to other long-term uses

The major impact here comes from oil and gas development clearing, clearings for system roads and

borrow pits, and clearings for new wildlife openings. The chart below displays rough estimates for each of these categories.

Acres Removed From Timber Production
(thousands of acres)

	Alternative					
	A	B	C	D	(D2)	E
FS Roads/Pits	2	2	3	3	3	3
OGM Clearing (new)	2	2	2	2	20	2
Wildlife Openings (new)	10	0	0	8	8	19
Total	14	4	5	13	31	24

IRRETRIEVABLE COMMITMENTS

The irretrievable commitment of natural resources is the loss of production or use of renewable resources or, in some cases, non-renewable resources. The opportunities to use resources may be foregone for a period of time due to a decision to manage or allocate an area to produce one resource rather than another. An example of an irretrievable commitment would be losing timber or mineral production in a designated wilderness area. If Congress decided to return a wilderness area to non-wilderness status, those resources would then become available for use. The difference between the yield of any resource in an alternative and the maximum production level of that resource is also an irretrievable commitment of a resource.

In contrast to irreversible resource commitments, irretrievable commitments are reversible if we reverse the allocation decision (the actual loss of production or use during the period of unavailability cannot be retrieved, however). The purpose of land and resource management planning is to provide a mix of uses now and for the future that balances the needs of both the current population and future generations. Irretrievable resource commitments are described in Section C and D of this chapter and are summarized in the pages that follow by alternative.

Mineral Resources

Federally owned mineral rights that have been Congressionally withdrawn from exploration and production constitute an irretrievable commitment. Both the Wilderness and National Recreation Areas (NRA's) overlie federally owned mineral rights. If all the

subsurface rights beneath the Wilderness Areas are acquired, 10,000 acres of mineral resources would be irretrievably committed. Current federal subsurface ownership beneath the NRA'S total 3,930 acres. Therefore, the total irretrievable commitment of mineral resources is 14,200 acres for all alternatives.

Visual Resources

Loss of potential for old-growth forests and continuous forest canopy where even-aged management is emphasized

Alternatives which have more even-aged management (EAM) and uneven-aged management (UEAM) have a lower potential for providing old growth forest conditions. The totals in the chart below show the difference between alternatives.

	Alternatives					
	A	B	C	D	(D2)	E
Thousands of Acres of EAM	82	243	403	354	354	175
Thousands of Acres of UEAM	105	20	11	6	6	175
Total	187	263	414	360	360	350

Alternatives which have more even-aged management have a lower potential for providing a continuous forest canopy (see EAM row in chart above). Since uneven-aged management does not create large breaks in the forest canopy, it has insignificant effects on this attribute of the visual resource.

Recreation

Loss of one type of recreation opportunity when replaced by another type

New campground construction will displace dispersed recreation activities in the immediate area surrounding the new facility. Table 4-3 displays the new facilities proposed in each alternative. Alternative C, with two resorts and four campground expansions in the reservoir area, would have the most effect, followed by Alternatives E and D. Alternative A would have a lesser effect, having

little change in the reservoir area but with significant construction scattered throughout the rest of the Forest. Alternative B would have the lowest effect since it includes only one new site.

Displacement of some types of recreation due to noise and disturbances from timber sales and oil and gas developments

Oil and gas development activity is the same for all alternatives, so differences in displacement between alternatives will reflect mainly the differences in the amounts of dispersed recreation proposed in that alternative. Those with higher dispersed use, such as Alternatives A and E, may show more displacement from a specific area than those with lower use.

Recreation activity displacement caused by noise from timber management activity is generally a short-term displacement, since timber harvesting generally occurs over only a few years, followed by 15 years or more when there is no harvesting. Figure 4-6 displays the area entered for timber harvest. Alternative E has the most harvesting, followed by Alternatives D, C, A, and B.

Wildlife

Loss of some types of hunting opportunities due to changes in habitat

Habitat changes resulting from varied management activities between the alternatives results in significant changes in small-game aand big-game hunting opportunities. Figures 4-25 and 4-26 show the changes for small-game and big-game hunting. The maximum production level is higher than all alternatives. All of the alternatives provide higher big-game hunting opportunities in Decades two through five than the current situation (Alternative B), with Alternatives D and E providing the highest use overall (sustain lowest loss). Alternatives C and D provide the highest small-game hunting opportunities or, in other words, sustain the smallest loss. Alternatives A and E consistently provide the lowest opportunities, and therefore, sustain the highest loss.

Timber

Lower timber volume production of some tree species, resulting from timber type conversion

Several of the alternatives call for converting high site oak to Allegheny hardwoods through natural regeneration. This results in decreased production of quality oak and an increase in black cherry production. The chart below shows the acres of such conversion by alternative.

Oak Conversion to Allegheny Hardwood
(thousands of acres)

	Alternative					
	A	B	C	D	(D2)	E
Oak Conversion	0	0	30	0	0	13

Loss of timber volume production in areas where timber management is not the primary objective

Timber production losses result when we allocate a given piece of ground to a management prescription which severely reduces or precludes timber management (6.1 and 5). Alternative A has the highest number of acres assigned to management areas 6.1 and 5 (see Table 2-10); there are successively lower amounts in Alternatives B, D, E, and C.

CHAPTER 5

List of Preparers

CHAPTER 5

LIST OF PREPARERS

An interdisciplinary core planning team was responsible for day-to-day production of the Forest Plan and Environmental Impact Statement. The Forest management team and other Forest Service personnel worked with the interdisciplinary planning team on many of the steps in the planning process. The management team was responsible for recommending a preferred alternative to the Regional Forester.

PRIMARY PREPARERS OF FEIS AND FOREST PLAN

GARY W. KELL - Landscape Architect

Education: B.S. Landscape Architecture, Pennsylvania State University

Experience/Expertise: One year park design for small communities with North Central Pennsylvania Economic Development District. Twelve years with Forest Service in Regions 1 and 9: seven years experience in landscape management, recreation site planning, recreation administration, and visual analysis, five years in land management planning.

Responsibility: Served as a member of interdisciplinary team. Coordinated development of recreation, wildlife resources, and engineering portions of the EIS and Forest Plan. Assisted in required analysis. Responsible for computer mapping of alternatives and spatial feasibility testing, wrote significant portions of the Forest Plan and the EIS.

CHARLES L. MYERS - Supervisory Land Use Planner

Education: B.S. Forest Management, Pennsylvania State University, 1972
M.S. Forest Science, Pennsylvania State University, 1975

Experience/Expertise: Experience as a forester with Pennsylvania Game Commission and Weyerhauser Corporation. Instructor at Pennsylvania State University in Forest Management. Six years experience in Forest Service: one year at the Southern Forest Experiment Station, two years programming planning and budgeting, and three years in land management planning.

Responsibility: Served as interdisciplinary team leader. Responsible for overall direction, coordination and preparation of DEIS and Forest Plan.

THOMAS L. RHODE - Forester/Operations Research Analyst

Education: A.A. Forest Tech., Pennsylvania State University, 1973
B.S. Forest Science, Pennsylvania State University, 1978
M.S. Forest Resources (Economics), Pennsylvania State University, 1983

Experience/Expertise: Two years as a forest technician in Mississippi and Maine with International Paper Co. Five years with Forest Service; one and one-half in program planning and budgeting, and three and one-half years in land management planning.

Responsibility: Served as a member of interdisciplinary team. Responsible for FORPLAN model development and analysis, wrote significant portions of the EIS, particularly in the analysis appendix (Appendix B of EIS).

SUSAN RUTHERFORD - Forest Hydrologist

Education: B.S. Biochemistry, University of California, 1975
M.S. Forest Resources (Hydrology), University of Minnesota, 1981

Experience/Expertise: Three years experience in medical research at Stanford University Medical School. Four years experience with Forest Service: two years with State and Private Forestry in New England, three years in water quality protection and management.

Responsibility: Served as principal author for Chapters 3 and 4 of the EIS. Coordinated development and provided guidance for Chapters 3 and 4 of EIS. Developed standards and guidelines for water resources.

ROBERT L. WHITE - Program Analyst/Forester

Education: B.S. Forest Science, Pennsylvania State University

Experience/Expertise: Certified silviculturist in Region 9. Eleven years of Forest Service experience in Washington Office, Regions 6 and 9: Six years in timber and wildlife management, one year policy analysis, one year timber sales administration, two years assistant district ranger for minerals, recreation and human resources, and three years as program analyst in land management planning.

Responsibility: Served as a member of interdisciplinary team. Coordinated development of timber, lands, and mineral resources portions of the EIS and Forest Plan. Assisted in required analysis. Wrote significant portions of the Forest Plan and the EIS, particularly in the analysis appendix (Appendix B).

SIGNIFICANT CONTRIBUTORS

RUSSELL F. ADAMS - Assistant Ranger, Ridgway Ranger District

Education: B.S. Forestry, Purdue University

Experience/Expertise: Twenty-six years with Forest Service: seven years timber management, twelve years recreation and fire control, and seven years minerals management.

Responsibility: Served as member of interdisciplinary team. Responsible for developing management prescriptions and standards and guidelines.

AMY J. BENSON - Volunteer and Temporary Employee

Education: B.S. Biology, Pennsylvania State University

Experience/Expertise: Experience with Northeast Forest Experiment Station, USDI-Fish and Wildlife Service, and U.S. Army Corps of Engineers. Worked on Allegheny National Forest for one year as a volunteer/computer clerk.

Responsibility: Prepared forest maps for each alternative. Summarized FORPLAN results. Coordinated writing and typing of DEIS and Forest Plan.

THOMAS COLLINS - Geologist

Education: B.S. Geology, City University of New York, 1965. Five years of graduate study in geology at the University of California at Los Angeles

Experience/Expertise: Worked in Alaska for Texaco in 1966 on mineral exploration. Worked for National Science Foundation in 1968 on a deep-sea drilling project. Employed part-time in 1968-1969 by the California Division of Mines and Engineering. Employed by the Forest Service for 15 years as geologist.

Responsibility: Participated in the analysis of Allegheny National Forest's potential for oil, gas and minerals development. Also worked on development of OGM demand scenarios and cost factors; helped structure the OGM yield composites.

RALPH COSTA - District Wildlife Biologist

Education: B.S. Wildlife Biology
M.S. Watershed Management (Forestry)

Experience/Expertise: Eight years with Forest Service in Regions 8 and 9: three years forester, and five years wildlife biologist.

Responsibility: Served as a member of the interdisciplinary team. Worked on the wildlife portion of the management prescriptions and standards and guidelines. Assisted in developing the management indicator species. Co-authored paper entitled "Determination and Maintenance of Minimum Viable Populations of Wildlife Species on the Allegheny National Forest."

DON A. CLYMER - Assistant Recreation Staff Officer

Education: A.A. Forest Technology, Pennsylvania State University, 1966
B.S. Forestry, Stephen F. Austin University, 1971
M.S. Forestry, Stephen F. Austin University, 1972

Experience/Expertise: Twelve years with Forest Service: three years timber management and nine years in recreation and minerals management.

Responsibility: Developed activities and output data for developed recreation, scenic highways, and trails. Wrote recreation standards and guidelines. Involved in writing recreation components of Chapters 3 and 4 of the EIS.

JOHN C. DORIO - District Wildlife Biologist

Education: B.A., M.A. Biology, St. Cloud State University, Minnesota

Experience/Expertise: Temporary positions with the Nature Conservancy, U.S. Fish and Wildlife Service, and the Bureau of Land Management. Five years with the Forest Service.

Responsibility: Responsible for writing certain wildlife portions in the Environmental Consequences and Cumulative Effects sections in Chapter 4. Developed the selection process used in determining the wildlife management indicator species and the lists of wildlife species associated with each indicator species and habitat type. Authored the paper titled "Plant and Animal Diversity Assessment and Maintenance of Viable Vertebrate Populations in Allegheny National Forest Land Management Planning". Co-authored the paper titled "Determination and Maintenance of Minimum Viable Populations of Wildlife Species on the Allegheny National Forest."

RUSSELL A. HILL - Forest Wildlife Biologist

Education: B.S. Forestry (Wildlife Management), West Virginia University

Experience/Expertise: Five years West Virginia Department of Natural Resources in habitat management. One and one-half years with USDI, Fish and Wildlife Service. Seventeen years with Forest Service.

Responsibility: Involved in providing wildlife resource data, standards and guidelines, and writing wildlife components of Chapters 3 and 4 of the EIS.

DONALD R. HOPPE - Forester

Education: B.S. Forest Management, Michigan Technological University, 1974
M.S. Forest Resources (Economics and Policy Analysis), Michigan State University, 1982

Experience/Expertise: Ten years with Forest Service including one year in timber management; five years as assistant district ranger for recreation, fire, land uses and human resources; one year in long-term training program at Michigan State University; two years in program planning and budgeting; and one year in land management planning.

Responsibility: Served as member of interdisciplinary team and provided general assistance in modification of planning documents. Coordinated development of wilderness, national recreation areas, program management, and research natural areas portions of final EIS and Forest Plan. Assisted in analysis and response to public input; worked on preparation of the Record of Decision for Forest Plan.

WILLIAM J. MORIARITY - Minerals Specialist/Soil Scientist

Education: B.S. Agriculture (Agronomy), Purdue University

Experience/Expertise: Worked on three national forests in Region 9 (Hiawatha, Mark Twain and Allegheny). Eight years as district ranger. Two years as minerals specialist. Soil scientist for nine years in four different states.

Responsibility: Wrote soils standards and guidelines and the soils, non-energy minerals, and energy minerals sections of Chapters 3 and 4 of EIS.

LAURA E. RAYBUCK - Volunteer and Temporary Employee

Education: B.S. Education, Edinboro University

Experience/Expertise: Worked on Allegheny National Forest for two years as a volunteer/computer clerk.

Responsibility: Worked with analyst in developing coding techniques for FORPLAN model. Responsibilities included data processing, data summary, and mapping alternatives.

MARLIN S. RODGERS - Timber Sales Forester

Education: B.S. Resource Management, New York State University, College of Environmental Science and Forestry

Experience/Expertise: Five years as a forester with Bureau of Indian Affairs in Montana. One and one-half years as a timber stand improvement forester at the Clearwater National Forest. Five and one-half years as assistant to the timber/wildlife staff officer on the Allegheny National Forest, specializing in timber sales.

Responsibility: Assisted in the development of timber yield tables. Provided input in standards and guidelines, section 2400 of the Forest Plan. Assisted in preparation of EIS sections related to vegetation and plans/programs of other agencies.

F. DANIEL SALM - Civil Engineer

Education: B.S. Forest Engineering, State University of New York

Experience/Expertise: Two years as a design engineer and four years as a transportation planner.

Responsibility: Developed engineering costs and activities. Wrote management prescriptions and standards and guidelines. Helped to estimate effects of alternatives.

HAROLD E. SCHOPPER - Assistant Ranger, Sheffield Ranger District

Education: B.S. Forest Resource Management, University of Minnesota

Experience/Expertise: Twenty-three years with Forest Service. Experience in timber management, recreation, special uses, and fire.

Responsibility: Served as member of interdisciplinary team. Wrote management prescriptions and standards and guidelines.

RUTH D. SEEGER - Geologist, Sheffield Ranger District

Education: B.S. Geological Sciences, University of Wisconsin-Milwaukee

Experience/Expertise: Two years with Forest Service in oil and gas administration.

Responsibility: Assisted in minerals supply and demand estimates, minerals availability, and standards and guidelines for minerals administration.

PHILLIP D. WESTON - District Wildlife Biologist

Education: B.S. Wildlife/Forest Management, SUNY-College of Environmental Science and Forestry at Syracuse

Experience/Expertise: Certified silviculturist in Region 9. Eleven years with Forest Service: two years as forest technician, two years as forester, one year as assistant ranger in timber, two years as assistant ranger in recreation, and four years as a wildlife biologist.

Responsibility: Served as member of interdisciplinary team. Assisted in preparation of cost and yield information. Wrote management prescriptions and standards and guidelines. Involved in selection of wildlife management indicator species.

FOREST MANAGEMENT TEAM

R. Forrest Carpenter, Forest Supervisor
John P. Butt, Former Forest Supervisor
Robert T. Jacobs, Deputy Forest Supervisor
Robert M. (Jim) Nelson, Former Deputy Forest Supervisor
Peter V. Larme, Administrative Officer
Martin F. Bilafer, Forest Engineer
Nils W. Johnson, Lands, Water, and Minerals Staff Officer
Joel C. Hockinson, Timber and Wildlife Management Staff Officer
Donald L. Burge, Land Management Planning Staff Officer
Paul R. Natale, Recreation and Fire Staff Officer
Paul D. Brohn, Public Affairs Specialist
James Higgins, Bradford District Ranger
Alban R. Flechsig, Marienville District Ranger
James A. Mohler, Ridgway District Ranger
James L. Schuler, Sheffield District Ranger

CHAPTER 6

DEIS/FEIS Mailing List

CHAPTER 6

DEIS/FEIS MAILING LIST

CONSULTATION WITH OTHERS

Publication of this Final Environmental Impact Statement is the latest in a series of efforts to involve the public in the development of a land and resource management plan for the Allegheny National Forest. Early involvement efforts focused on identification of Forest-wide and area-specific issues and concerns. The methods used to collect these issues are documented in the planning records and the issues and concerns collected are listed in Appendix A. Public involvement emphasized the development of alternative strategies for solving the major issues raised. This effort culminated in the issuance of the Draft Environmental Impact Statement and Proposed Plan for formal public review on January 25, 1985. A summary of the comments received and the Forest Service response to each is displayed in Appendix C.

MAILING LIST FOR DEIS

Copies of the Draft Environmental Impact Statement and proposed Forest Plan and/or an Overview of these documents were made available to the individuals and organizations listed below upon their request.

Business and Industry

Allegheny Cycle Center
Allegheny Forestry, Inc.
Allegheny Logging Co.
Allegheny Power Corporation
Alpha Svenska, Ltd.
American Hardwood Ind.
American Lumber
Amoco Production Co.
Mr. Lawrence D. Andersen
Mr. David E. Anundson-Consulting For.
Apex Resources
Appalachia Watershed Corp.
Joseph W. Arnold Assoc.-Consulting For.
Mr. Norman Asel-Trucker (Logging)
Ashtola Production Co.
Atlantic Richfield
Babcock Lumber
Baker Trading Co.
Fulton Brothers
Ed Bennett Lumber
Buehler Lumber Company
Burke, Parsons, & Bolby Corp.
James T. Burton Estate
Cabot Oil & Gas Corp.
Clifford B. Carts Co.-Con. For.
Mr. Arther Carlson-Logger
Mr. Horace A. Carmalt, Realtor
Cloverleaf Resort
Clymer Bag Company
Cochran Lumber Co., Inc.
Collins Pine Company
Columbia Gas of Penna., Inc.
Columbia Gas Transmission Corp.
Commonwealth Oil & Gas Co., Inc.
Consolidated Gas Supply Corp.
Cornish Lumber
Corporate Woodlands
Mr. M. W. Crissman-Logger
Mr. Robert C. Cryan, Pres.
D'Appolonia Drilling Company

Business and Industry (con't)

Green International, Inc.
Beyer Construction Co.
Mr. Richard Bizzak-Logger
Blue Diamond Enterprises
Dixie Veneer Co.
Dodson Oil Corp.
Donver, Inc.
Edward Engineering
Edwards and Moncrey
Elkdale Wood Products
Ellington Hardwood Lumber
Endeavor Ventures
Environmental Associates
Ethan Allen, Inc.
Bob's Union Service
Fitzpatrick & Weller
Forecon, Inc.
Forest Contractors Weekly
Forestry & Surveying Associates, Inc.
Forward Lands, Inc.
Fox Chapel Env. Service
Frederick Drilling Co.
Freeman & Freeman
Mr. Louis Geer-Oil and Gas
General Concrete Products Corp.
Grosch Brothers
Mr. Sam Guaglianone-Insurance
Hammermill Paper Co.
Hannahs & Jordan
Hardy & Yoke
Hervatin Lumber Co.
Hickman Lumber Co.
Hidden Valley Ski
High Adventure Tours
E&R Hitchcock & Sons
Horizon Forestry & Logging
Mr. Keith Horn-Consulting Forester
Hyma-Devore Lumber Co.
IPSCO
Mr. Larry Johnson-Logger
Kane Gas Co.
Kane Gas Light & Heating Co.
Kane Handle Co.
Kane Hardwood Div. Collins Pine
Mr. Gary Karlene-Logger
Kendall Refining Co.
Ms. Sue Daugherty-Realtor
Delta Timber
Mr. Maurice Dickey-Oil and Gas
Dick Koos Cycle Sport
Mr. Dwight Lewis-Logger
Lewis & Hockenberry
Maljovec Lumber Co., Inc.
Robert Mallery Lumber Co.
Louis Mason Mill, Inc.
Mr. Albert L. Massey-Land Architect
Matson Lumber Company
McMillen Lumber of Sheffield
Mead Corporation
Mr. Gene Miles-Logger
Minard Run Oil Company
Mr. William Nagy-Con. For.
National Fuel Gas Supply Corp.
Mr. Bennie Netzer-Logger
NE Natural Gas Co., Inc.
North Penn Pipe & Supply, Inc.
Northwest Engineering, Inc.
Novosel Land Company
Ochs Lumber
Otter Creek Corp.
PPG Industries
D. Palombo Association
Payne Lumber Company
Penelec
Penn-Cal Contractors, Inc.
PA Power & Light Company
PA Rural Electric Assocation
Penntech Papers, Inc.
Pennzoil
Plateau Hardwoods, Inc.
Potter Enterprise
Potter Lumber Company
Project New Corporation
Quaker Energy Dev. Corp.
Quaker State Oil Ref. Corp.
RAM Forest Products, Inc.
Mr. James & Mrs. Diane Rapp
Red Oak Campground
Renewable Forest Resources Co.
Richardson Petroleum Corp.
Ridgway Lumber Co.
Mr. William J. Rolick-Logger

Business and Industry (con't)

Kinzua East Kampground (KDA)
Kinzua Korners Sport Shop
Mr. Edward Kocjancic-Consulting For.
Koppers Co., Inc.
Larimer & Norton, Inc.
Shawnee-Clinger Oil Co.
Mr. William Snyder
Mr. George Spilka-Logger
Stickney Trans. Svc., Inc.
Telephone Utilities of Pennsylvania
Tennessee Gas Pipeline Co.
Texasgulf, Inc.
Tiona Forest Products
Tracy Engineers, Inc.
United Energies
Gary T. Rossman Logging
Mr. Frank Rudolph-Fishing Bait
Southwest Forest Industries
Mr. Ed Schultz, Camp & Trail
R. B. Shannon & Assoc., Inc.
Mr. Thomas Vantine-Logger
Viking Resources
Warren Concrete Products, Inc.
Warren Recreation Center, Inc.
West Penn Power Company
Roy F. Weston, Inc.
West Va. Company
Witco Chemical Corporation
Mr. Lawrence Wolfe-Consult. For.

Federal

Agricultural Stab Cons. Svc.
Mr. Joseph E. Barnard
Mr. Joe Binder
Hon. Robert A. Borski
Mr. Ted Buckwalter
Chequamegon National Forest
Hon. Wm. F. Clinger, Jr.
Hon. Lawrence Coughlin
Hon. William J. Coyne
Hon. Bob Edgar
Environmental Protection Agency
Hon. Thomas M. Foglietta
Forest Service Research Lab
USDA-Forest Service - Research Station
Hon. Joseph W. Gados
Hon. George W. Gekas
George Washington National Forest
Hon. William F. Goodling
Hon. William H. Gray
Hon. Frank Harrison
Mr. John Heinz, III
Huron Manistee National Forest
Ms. Kathleen Klimkiewicz
Hon. Joe Kolter
Hon. Peter H. Kostmyer
Hon. Joseph McDada
Monongahela National Forest
Hon. Austin J. Murphy
Hon. John P. Murtha
Ohio River Basin Comm.
Ottawa National Forest
Hon. Thomas J. Ridge
Hon. Don Ritter
Hon. Richard T. Schulze
Soil Conservation Service
Hon. Bud Shuster
Hon. Arlen Specter
Mr. Joel Strauss, Esq.
Hon. Gus Tatron
US Army Corps of Engineers
USDI-Forest Service - Pest Mgt.
USDI-Bureau of Indian Affairs
USDI-BLM, Div. Mineral Resources
USDI-Heritage Conserv. & Rec. Svs.
USDI-Park Service
US Fish & Wildlife Service
Hon. Doug Walgren
Hon. Robert S. Walker
Wayne-Hoosier National Forest
White Mountain National Forest

Local

Armstrong County Ind. Dev. Auth.
Bradford Area Chamber of Commerce
Bradford Township Supervisors
Brockway Public Library
Butler County Cons. District
Cameron County Offices Public Library
Dubois Public Library
Elk County Planning Commission
Elk County Chamber of Commerce
Elk County Commissioners
Pres., Elk County Township Supervisors
Erie County Department of Health
Erie County Commissioners
Forest County Planning Commission
Pres., Forest Co. Township Supervisors
Foxburg City Countil
Glade Township Supervisors
Greenville Area Chamber of Commerce
Johnsonburg Public Library
Kane Public Library
Lafayette Township Supervisors
Loyalhana Watershed Assoc.
Marienville Area Library
McKean County Commissioners
McKean County Development Authority
McKean County Planning Commission
Carnegie Public Library
Cattaraugus County Planning Board
Chautauqua County Dept of Plng/Dev
Clarion Free Library
Corydon Township Supervisor
Crawford County Planning Commission
McKean County Sheriff
Pres., McKean Co. Twp. Supervisors
Mead Township Supervisors
Pittsburgh Port Authority
Rigway Borough Manager
Ridgway-Elk Co. Chamber of Commerce
Ridgway Public Library
Ridgway Waterworks
Sheffield Townships Supervisors
St. Marys Public Library
Sugar Grove Free Library
Tidioute Public Library
Tionesta Library
Venango County Cons. District
Warren Co. Chamber of Commerce
Warren County Commissioners
Warren Library Association
Warren County Recreation Authority
Pres., Warren Co. Twp. Supervisors
Wilcox Public Library
Youngsville Public Library

Individuals

Mr. Timothy Acker
Mr. Scott Adamson
Mrs. Ted Altmire
Mr. Dale Anderson
Mr. Ray Anderson
Mr. Paul H. Antes
Mr. Dwight Armour
Mr. & Mrs. Ed Atwood
Mr. Clifford Bacher
Mr. & Mrs. Roy Bailey
Mr. Edward L. Baker
Mr. Jerry Balczon
Mr. J. W. Bargerstock
Mr. Christopher Barns
Mr. Richard P. Barylski
Mr. William S. Bassert
Mr. Robert B. Bennett
Mr. John Benton
Mr. Robert Billman
Mr. Paul R. Bishop
Mr. Dave Blackmore
Mr. Robert L. Blew
Mr. Robert Bobel
Mr. Keith D. Boardley
Ms. Susan Boutros
Mr. Richard E. Bradley
Mr. John M. Brady
Ms. Lola Brewer
Mr. James P. Brogam
Mr. John W. Bryner
Mr. Lou Bucklin
Mr. Fred Bungert

Individuals

Mr. Herbert Bauer
Mr. Steve Bean
Mr. Donald S. Beaumariage
Dr. & Mrs. Remsen Behrer
Mr. Ron Bencinic
Mr. Robert C. Benim
Mrs. Martha Bennett
Mr. Craig Caldwell
Mr. Paul R. Calkins
Mr. Richard Campbell
Mr. William Campbell
Mr. Bill Carlson
Mr. Jim Carrall
Ms. Betty Cashdollar
Mr. Bill Chamberlain
Ms. Terri Chase
Mr. Wilbur Christie
Mr. Chris Clayton
Mr. Frank L. Clements
Mr. Woody Colbert
Mr. Livio Colosimo
Ms. Bonnie Corcoran
Mr. Harold Crosby
Mr. Larry Crossley
Mr. M. Cucchiara
Mr. David E. Culbertson
Mr. Tom J. Curtin
Mr. Fraust E. Curzi
Mr. Wallace Czekalski
Mr. Joseph T. Davido
Mr. Joseph P. Davis
Mr. Arthur Davis
Mr. Edward L. Dawes
Mr. Edgar DeCaprio
Mr. Alexander D. Deemer, II
Mr. Stanley Denny
Mr. Arthur J. Dietz
Mr. Harry R. Dillaman
Mr. Max Douthit
Mr. John and Mrs. Ruth Drozinski
Mr. Frank Dunkle
Mr. Duane Dunn
Ms. Virginia M. Eddy
Mrs. Fred Edmiston
Mr. Paul Egnacheski
Mr. E. Robert Emery
Mr. W. E. Burgeson
Mr. John M. Burns
Mr. Paul Burns
Mr. Jim Busher
Mr. Frank E. Butz
Ms. Kathleen Butz
Mr. C. W. Cable
Mr. Joby Felton
Mr. Dan & Mrs. Florence Figore
Mr. Ernest Filippi
Mr. Robert L. Fisher
Kim Fitzgerald
Mr. Regis A. Fleming
Mr. David Flynn
Ms. Paula Ford
Mr. & Mrs. E. H. Forman
Mr. George F. Fox
Mr. James Francis
Mr. Hume Frayer
Mr. Paul V. Fremer
Mr. Gerald R. Fry
Mr. Steve Galac
Mr. & Mrs. John Galey
Mr. W. P. Gallagher
Mr. Robert Galliford
Mr. William A. Galloway, Jr.
Mr. Randolph Garrish
Mr. & Mrs. John Gell
Mr. R. M. Gensert
Mr. Thomas George
Mr. Ray W. Gerard
Mr. William Gerg
Mr. Ray Gibson
Mr. Walter Gleason
Mr. Dieter Gonnsen
Mr. Harold Graybill
Mr. Howard H. Green
Mr. Piere Gregg
Mr. Ted Grisez
Mr. Roby Grose
Mr. & Mrs. John F. Grossen
Mr. David Hafer
Mr. Ed Hames
Mr. A. M. Haney
Mr. Merle Hartman
Mr. Wallace Hawlik

Individuals (con't)

MA. V. Emery
Mr. Dwight E. Endre
Mrs. Ailine C. English
Lloyd or David Eschrich
Mr. Burnell Farnsworth
Mr. Edward P. Farrand
Mr. & Mrs. C. W. Fay
Mr. Terry Feeney
Mrs. Robert Hinrichsen
Mr. Duane Hipchen
Ms. Mary Hoffman
Mr. Robert Holland
Mr. Bob Holmes
Mr. John Holmes
Mr. James D. Honan
Mr. Matt Hotchkiss
Mr. James C. Hovanec
Mr. Paul A. Hovanec
Mr. Mickey Howard
Mr. Vincent E. Howard
Mr. & Mrs. Earl Howell
Dr. Frank A. Huber
Mr. John Hummel
Linn Hyde
Mr. Larry Ingerson
Mr. James Irwin
Mr. Robert Jackson
Ms. Joan Jeffers
Mr. Alfred L. Johnson
Mr. Monroe Johnson
Mr. James L. Juth
Mr. Thomas Karrs
Mr. Steve Karschner
Ms. Diane Keller
Mr. H. F. Kelly
Mr. William Keown
Ms. Maria Kingston
Mr. Larry H. Kirschler
Mr. Douglas Kitchener
Mr. Victor Kitelinger
Mr. John L. Knaus
Mr. & Mrs. Kenneth Knight
Mr. Henry O. Koester
Mr. Josephy Kopena
Mr. Jay Korman

Mr. Sam Hays
Mr. David Helm
Mr. Wiliam Hewel
Mr. Thomas W. Hiegel, Jr.
Mr. Ken Higgins
Mr. William Highhouse
Mr. Charles Hill
Mr. Earl E. Hickley
Ms. Ruth Latt
Mr. Bill Lawrence
Ms. Joy Layton
Mr. David P. Lesser
Mr. R. Lewis
Ms. Cynthia Lifsan
Mrs. Donald E. Liska
Mr. Brian Lippert
Ms. Beverly Lockhart
Mr. Ruddy C. Luce
Mr. Paul L. Mancini
Mr. Roger Mandich
C. L. Mann
Ms. Helen Marquard
Mr. Joseph Marquart
Mr. James G. Marshall
Mr. Albert Mazur
Mr. James V. Mazzu, Jr.
Mr. H. A. McAdoo
Mr. Joseph F. McAmbly
Mr. John E. McAtee
Mr. William E. McChesney
Mr. James McHugh
Mr. Charlie McKeann
Mr. Harold J. McLaren, Jr.
Mr. Joseph M. McMullen
Mr. Charles T. McNeal
Mr. Charles D. McQuaid
Geary P. & James Meade
Mr. George Means
Mrs. Elsie Meinert
Mr. & Mrs. Alan H. Michael
Ms. Beverly Ann Micheltree
Mr. Gary L. Miller
Mr. Waide E. Miller
Mr. & Mrs. Charles E. Mohney
Mr. & Mrs. Gregg Moore

Individuals (cont'd)

Mr. Walter F. Kornman
Mr. Michael Koryak
Mr. Charles Kosey
Mr. James M. Kramer
Mr. David Kriegel
Mr. David A. Krupa
Mr. Richard Kubiak
Mr. George H. Laird, Sr.
Mr. & Mrs. Charles Larson, Jr.
Mr. Lloyd Lash
Mr. Gary Newman
Mr. Phillip Norcross
Mr. Steve Novosel
Mr. Garold W. Oakes
Mr. Mark Ohlswager
Mr. Marvin Oquist
Mr. F. J. Orzechowski
Mr. Steve Ostrander
Mr. Roger Pais
Mr. William Park
Mr. Ray Pastore
Ms. Sally Paterson
Mr. Thomaks Pauley
Mr. Samuel T. Pees
PA DER Bureau of Forestry
Ms. Irene Penfield
Ms. Christen Perry
Mr. Kent Persinger
Ms. Valerie Peters
Mr. Rege Pfoff
Mr. Thomas Pierce
Mr. R. Porter
Mr. Ed Post
Mr. Frank Potocnik
Mr. Richard H. Pratt
Mr. Richard Probst
Mr. Joseph Proske
Mr. Marvin O. Quist
Mr. Russell W. Ragan
Mr. Ron Ragghiante
Mr. David L. Raphael
Mr. Thomas F. Rastatter
Mr. John C. Reynolds
Mr. Paul J. Reynolds
Mr. John Rice
Mr. Ron Morley
Mr. & Mrs. James Morneweck
Mr. Lawrence P. Moses
Mr. Joseph Moski
Mr. Carl & Mrs. Imogene Moyer
Mr. Earl Muffie
Mr. Michael J. Murphy
Mr. William Murphy, Jr.
Mr. James Mydock
Mr. Chester L. Negley
Ms. Peg Schneider
Ms. Dorothy Scholze
Mr. Ernest Schreiber
Honey Schrechengost
Ms. Kathleen Schwartz
Mr. Larry Schweiger
Mr. Thomas M. Shadle
Mr. John Shafer
Mr. George Schecker
Ms. Irene Simbeck
Mr. Leroy B. Simons
Mr. Frank Sims
Mr. James S. Smith
Mr. John H. Smith
Mr. & Mrs. Paul A. Smith
Mr. Ralph W. Smith
Ms. Mary D. Snavely
Mr. William Snavely
Mr. Nick Solis
Mr. Walter Speedy
Mr. Herbert V. Sperling
Mr. Ron Stafford
Mr. Elmer Stahl
Mr. Robert R. Stanger
Mr. Tony L. Stec
Mr. Thomas H. Stehle
Mr. Glenn Steyers
Mr. Lawrence Stotz
Susan & David Stout/Snyder
Mr. Rudy Straneva
Mr. William D. Straub
Ms. Kathleen A. Stroop
Mr. John & Mrs. Jean Stull
Mr. M. Robert Sullivan
Mr. Bill Summers

Individuals (cont'd)

Mr. Dennis Roach
Mr. Carl Rose
Mr. Robert Rourke
Mr. Arthur C. Rowe
Ms. Eloise T. Ruffing
Mr. Ronald B. Ruppen
Mr. D. L. Saf
Mr. W. L. Sager
Ms. Adele Sawaya
Ms. Mary Kay Schatz
Mr. John Schauer
Ms. Kathy Schaefer
Mr. Richard Schick
Mr. Jeff Schmidt
Mr. Robert Tisony
Mr. Cecil Toombs
Mr. John E. Triplett
Mr. Gregg G. Turner
A. C. VanNort, Jr.
Mr. Al Venderpoel
Mr. James K. Vessey
Mr. George Wachter, Jr.
Mr. Glenn E. Warner
Mr. Daniel R. Watson
Mr. Bill Welch
A. Harrison Wegg
Mr. Clarence Wensil
Mr. Harvey E. West
Mr. Steve Wiles
Mrs. Samual Wilhelm
Mr. Paul Sundheimer
Mr. Sam Sunseri
Mr. Dominic A. Suppa
Mr. David T. Swanson
Mr. Robert Swanson
Mr. John Swords
Ms. Majorie Taylor
Mr. Robert Taylor
Mr. Thomas W. Taylor
Mr. Evan G. Thomas
Mr. Fred E. Thomas
Mr. J. D. Tiberi
Mr. Craig Tipton
Mr. Earl W. Tipton
Mr. Charles Wilkinson
Mr. James Williams, Jr.
Mr. Ed Willis
Mr. Joe Wills
Mr. Nathan Wilmot
Mr. Kenneth A. Wilson
Mr. Frank Wisniewski
Mr. Bobby Witters, Jr.
Ms. Renata Wolynec
Mr. Larry G. Woods
Mr. Jack Wozniak
Mr. Martin Wright
Mr. J. J. Yucha
Mr. Rick Zenn
Mr. Joseph A. Ziebre
Mr. L. C. Ziegler

Organizations

Zippo Archers
Allegheny County Sportsmens Lg., Inc.
Allegheny Outdoor Club
American Alpine Club
American Motorcyclist Assoc.
AMA Dist. 4 Rider Magazine
American Youth Hostels
AYH, Pittsburgh Council
Audobon Society of Western PA
Beaver County 4-Wheel Drive, Inc.
Bradford Naturalist Club
Bucktail Rescue Team
Kenstone Trails Assoc.
Kinzua Power Squadron
League of Women Voters
McKean Co. Federation of Sportsman
Pat McKinney-Keystone TallTree Coun.
Meadville Sportsmen's Club, Inc.
National Audubon Society
National Council State Garden Clubs
National Forest Products Assoc.
National Offroad Bicycle Assoc.
National Wild Turkey Federation
National Wildlife Federation

Organizations (cont'd)

Conservation Foundation
Conservation League
Crawford County Sportsmen's Council
Dilks Communications
District Four Trail Riders
East Coast 4-Wheel Drive Assoc.
Elk County Fed. of Sportmen's Clubs
Elk County Snow Drifters
Elk County Sportmen's Club
Empire State Snowmobile Assoc.
Environmental Defense Fund
Finger Lakes Trail
Fox Township Sportsmen's Club
Hardwood Lumber Mfgrs. of PA
Hila Sportsmen's Assoc.
Island Run Sportsmen's Club
Izzak Walton League
Ms. Nancy Jeffries (PATRA)
PA Trails Advisory Council
POGAM
Potter County Fed. Sportsmen's Clubs
Presque Isle Audubon Society
Presque Isle Garden Club
Ridgway Rifle Club
Ruffed Grouse Society
Seneca Highlands Assoc.
Seneca Nation of Indians
Sheffield Garden Club
Sheffield Wildlife Cons. Club
Sierra Club, Allegheny Group
Sierra Club, PA Chapter
Sierra Club, Lake Erie Group
Sierra Club, Moshannon Group
Sierra Club, NE Ohio Group
Natural Resource Defense Council
Northcentral Division PFSC
No. Allegheny Cons. Assoc.
Northern County Trail Riders
Northwest Division PFSC
ORV Monitor
PA Campground Owners' Assoc.
PA Chap. NWTF, NW Region
PA Deer Association
PA Division of IWLA
Penna. Environ. Council
PA Farmer's Asociation
PA Fed. Sportsmen's Clubs
PA Grouse Trial Club
PA Jt. Leg Air & Water Poll.
PA Snowseekers Snowmobile Club, Inc.
Penn State Joint Venture
PA State Snowmobile Assoc.
Sierra Club, Virgina Group
Trot Unlimited
Ms. Nancy Troy - PURE
Mr. L. Unger
Venango County Council Sportsmen
Wales Sno-Drifters, Inc.
Warren County Council of Sportsmen
Western Forest Industries
Western PA Conservancy
Wilcox Sportsmen's Club
Wilderness Society
Wilderness Watch
Wildlife Management Institute
Wildlife Society, PA Chapter
Wolf Creek/Slippery Rock Assoc, Inc;
GASP

Media

Associated Press
Mr. Michael L. Bleech
Bradford Era
Buffalo Evening News
Mr. Thad Bukowski
Mr. Edward W. Carlson
Corry Journal
Mr. Bruce Cutler
Editor, Daily Press
Ms. Carole McNall
Mr. Bob Moorhouse
Northwoods Publications, Inc.
Olean Times Herald
Mr. John Plowman, Jr.
Mr. Elliott Potter
Mr. Bob Quarteroni'a
Ridgway Record
Mr. Jim Ross, Outdoor Ed.

Media (cont'd)

The Derrick
Mr. Dave Drakula
Mr. Thomas Dunkin
Erie Times
Mr. John R. Evanetski
Franklin News Herald
Mr. Jerry Hassinger
Mr. Franklin Hoff
Mr. Ralph C. Horton
Jamestown Post Journal
Johnsonburg Press
Kane Republican
Mr. Vern Larson
Leader Vindicator
Titusville Herald
Valley Publishing Co.
Warren Times Observer
Youngstown Vindicator
WCED News
WICU-TV
WJTN
WKSN
WKZA
WNAE
WSEE-TV
WTMX
Manager, WWCH

State

Agricultural Ext. Service-Elk County
Allegany State Park & Rec. Comm.
Allegany State Park
Bendigo State Park
Chapman State Park
Cook Forest State Park
Cooperative Extension Service-State
Hon. Robert Kusse
Hon. William Mackowski
NYS DEC Forest Res. Planning
NYS Parks & Rec., Env. Mgt. Bur.
Ohio Department Natural Resources
PA Bureau of Emp. Security
PA Bureau of Forestry
PA Bureau of Soil & Water
PA Bureau of Water Quality Mgt.
PA Dept. of Env. Resources
PA Dept. of Env. Planning
PA DER Bureau of State Parks
PA Dept. of Highways
PA Fish Commission
PA Game Commission
PA Game Protector (Warren County)
PA Intergovernmental Council
Rep. John Peterson
Richard Thornburgh, Governor
Rep. William Wachob
Warren County Extension Service
Hon. Roy Wilt

Colleges/Universities

Allegheny College
Behrend College
California State College
Carnegie-Mellon University
Clarion State College
Community College of Allegheny County
Council Rock School
East Forest High School
PA Coop. Wildlife Res. Unit
Pennsylvania State University
Sewickley Academy
Slippery Rock State University
SUNY/Buffalo
SUNY College of Env Science/Forestry
University of Akron
University of Maine

Colleges/Universities (cont'd)

Edinboro State College
Forest Area School District
Garrettsville, Ohio Board of Education
Institute for Res. on L&W Resources
Int. Council for Outdoor Education
Kane Area High School
Mansfield State College
Michigan State University
University of Michigan
University of Minnesota
University of Oregon
University of Pittsburgh
Warren Area High School
Warren County School District
West Virginia University

Regional

Mr. John Antonini
Mr. Joseph A. Kuhn
Mr. Donald J. Masisak
NC PA Regional Plng. & Dev. Comm.
North Central Enterprise, Inc.
NW PA Reg. Plng. & Dev. Comm.

Employees

Abplanalp, Harold
Adams, Russell F.
Albacker, Jane L.
Anderson, Leif
Anthony, Irene C.
Arkett, Jennifer
Bailey, Richard M.
Barbeito, Joseph L.
Barletta, Pete
Barrett, Steven
Bauer, Arthur L.
Beers, William W.
Behanna, Robert L.
Beige, R. Michael
Beyeler, Twila L.
Bilafer, Marty
Brechtel, Gertrude M.
Brereton, Jeanmaire
Briggs, Elizabeth
Brohn, Paul
Brown, Larry
Burdick, Myrna R.
Bures, John H.
Burge, Donald L.
Butt, John P.
Caldwell, Clyde
Carey, Joseph A.
Carlson, Sharon M.
Carr, Joan
Christy, Ronald
Cleveland, James R.
Clow, Arthur P.
Clymer, Don A.
Cogis, Paul
Collingwood, James
Costa, Ralph
Critelli, Louis
Cunningham, Ernest
Danielson, Irene S.
Danielson, Clarence
Dexter, Myron E.
Dorio, John
Dotterer, Robert L.
Dougherty, James
Doyle, Hiriam
DuMond, Clara
Durlin, Wendy
Eggler, Margaret
Elrod, Francis R.
Erskine, Jennie L.
Figliuzzi, Ruth
Fitzgerald, H.

Employees (cont'd)

Fleming, Helen
Flechsig, Alban R.
Francis, Valerie F.
Frank, Charles G.
Frazier, Harry B.
Gallo, Ralph J.
Gardner, Carl S.
Gearhart, Porter
Gens, Dolly
Goebel, Mark J.
Goodwin, Curtis
Grant, Cyril J.
Graffin, Roger
Hagstron, Oke
Hallenius, Charles J.
Handyside, Jean E.
Haney, David W.
Hansen, Ronald
Harris, Margaret
Hazen (Swanson), Stacey
Hecei, Joyce
Heller, Donald M.
Henschel, Edward G.
Hepinger, Joseph
Highhouse, Larry
Hill, James N.
Hill, Russell A.
Hillard, Raymond
Hilyer, William A.
Himes, Leslie L.
Hoak, Louis C.
Hockinson, Joel
Hopley, Eugenia S.
Howe, Aaron L.
Huber, William S.
Hus, Henry
Irvine, Arnold
Jablonowski, Carl E.
Jackson, Albert L.
Jackson, Brenda
Jackson, Elta T.
Jamieson, Sandra L.
Janes, Elizabeth
Jankowski, Stan
Jedrek, Kim
Jedrek, Leonard
Jerman, Barbara
Johnson, Gunnar
Johnson, Nils. W.
Kasaback, James A.
Keene, Deanna
Kell, Gary W.
Kiehl, Verda S.
Kirsch, Theodore J.
Kobielski, Stanley
Kreitzer, Regina F.
Labesky, Betty A.
Lauffenberger, Hugh
LeClair, Deborah
Leibert, Charles E.
Lican, Tony F.
Lobdell (Peffer), Diane L.
Lonoff, Elizabeth
Lovgren, Karin
Luke, Robert A.
Marshall, Lawrence E.
Matison, Alvie
Maze, John D.
McBride, Robert J.
McClain, Adda
McClelland, Mabel
McGrady, Charles E.
McTavish, Raymond E.
Miller, Carl D.
Miller, Evelyn E.
Miller, Kathleen
Miller, William W.
Morgan, Joseph J.
Morgan, Paul
Morley, Rodney
Myers, Charles L.
Myslinski, Stanley J.
Nearing, Robert L.
Nelson, R. M. "Jim"
Nicklas, Leonard C.
Northrop, Edward E.
Parmeter, Howard W.
Parrett, Cecil

Employees (con't)

Paterson, Leslie
Petitt, Harold
Pittock, Connie L.
Pompilio, Philip A.
Porter, Elizabeth A.
Porter, Greg
Porter, Miller
Possinger, Ralph C.
Powell, Margaret A.
Quarrels, Owen
Rafael, Morla
Raught, Marjorie A.
Raybuck, Howard
Reinke, Marvin
Raymondo, Paul
Rhode, Thomas L.
Richards, Harold
Rodebaugh, Jim
Rodgers, Marlin
Rossey, Anne L.
Salm, F. Daniel
Schneck, John
Schuler, James
Schuler, Nancy R.
Schopper, Harold
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CHAPTER 7

Index

CHAPTER 7

INDEX

The index for the Final Environmental Impact Statement (FEIS) and its Appendices shows where the reader can find significant descriptive information about each of the listed items. Each reference includes the chapter number (1 through 8) or appendix number (A or B) along with the page number in each where the discussion occurs. Page numbers within a chapter are separated by commas, and page numbers between chapters are separated by semi-colons. So, for the item below entitled "age class," the reference is to Chapter 4, page 76.

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CHAPTER 8

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In addition, there are planning records available in the Forest Supervisor's Office. These planning records relate to the Forest Planning Process as described in 36 CFR 219.12, and include:

- Identification of purpose and need which includes the issues, concerns, and opportunities collected.
- Planning criteria used to guide the process.
- Inventory data background information.
- Analysis of the management situation including background for yields, costs, demand, management prescriptions, and benchmark analysis.
- Process for the formulation of alternatives.
- Reference information related to the estimation of effects and evaluation of alternatives.

APPENDIX A

Issues, Concerns, and Opportunities

APPENDIX A

ISSUES, CONCERNS, AND OPPORTUNITIES

A. PUBLIC INVOLVEMENT

The first step of the ten step NFMA planning process is to define the planning issues. We began by identifying interested individuals and groups, especially those we felt have special influence or interests. We took action initially as well as throughout the planning process to solicit ICO's from our publics and agency personnel. Our general strategy with the public has been to use a two-step approach with each contact. We first inform and involve key members of interest groups and agencies. One of their roles is to disseminate information and lay the groundwork with their constituency for the second step of our public involvement process, involving the general public.

Chronological Summary of Public Involvement Activities Prior to Issuing the Draft EIS and Draft Plan

January 6, 1981

A general news release[1] introduced the planning process resulting from the National Forest Management Act of 1976. An opportunity was given to be put on the forest planning mailing list.

January 19, 1981

"Notice of Intent to Prepare an Environmental Impact Statement" for the proposed Land Management Plan was published in the Federal Register. An opportunity was given to be put on the forest planning mailing list.

January 21, 1981

Letters sent to approximately 250 full-time and part-time ANF employees asking for their concerns. 146 responses received.

1 All general news releases went to local and regional newspapers, magazines, radio stations and television stations.

February 5, 1981

Letters sent to approximately 50 initial members of the key contact list asking for their comments regarding issues. A total of 16 responses were received.

June 2, 1981

Approximately 1,000 tabloids were sent to individuals on the Forest mailing list. The tabloid offered a response form which asked for new issues and comments. Twenty-seven responses were received.

March, 1982

Letters were sent to approximately 60 public agencies, industry groups, Indian tribes, and legislative delegations to announce the planning process and solicit ICO's.

June 15, 1982

A general news release relating to revisions of the planning regulations. It announced a public meeting in Washington, DC and an extension of the comment period.

August 19 & 24, 1982

A selected group of individuals attended five separate meetings regarding recreation management concerns and concepts. A total of 51 responded with comments, either orally or in writing, in addition to their attendance at the meetings.

April 21, 1983

A general news release announced a planning workshop for key contacts on May 11-12 and solicited questions on issues and alternative management strategies.

May 11-12, 1983

Approximately 100 selected key contacts were invited to attend an LMP workshop. A total of 58 responded. Tentative plan alternatives and management goals were discussed and additional issues were raised.

June, 1983

A general news release described a revision of the Notice of Intent to prepare an Environmental Impact Statement published in the Federal Register. This revised the planning issues to include further analysis of the roadless areas previously considered in RARE II.

July, 1983

All timber purchasers, mill operators, Penn State forestry faculty and extension personnel, and forestry consultants were invited to discuss the planning process, management prescriptions, tentative forest plan alternatives, and raise additional issues. Twenty people attended the meeting.

December 12, 1983

Approximately 1,500 tabloids were sent out asking for comments regarding tentative LMP alternatives. A total of 92 responses were received.

December 15, 1983

A general news release announced the availability of the planning newsletter relating to the tentative planning alternatives.

March 16, 1984

A general news release announced a special planning workshop and provided an open invitation to question or comment on plan alternatives.

March 27, 1984

A number of key contacts (58) were invited and a total of 25 attended another LMP workshop on the tentative planning alternatives.

April, 1984

Allegheny National Forest timber purchasers were invited to discuss the tentative land management planning alternatives. A total of 27 attended the meeting.

June 30, 1984

Seventeen local and regional representatives of Sierra Club were invited to discuss the tentative land management planning alternatives. A total of four people, representing PA Sierra Club Groups, attended the meeting.

Chronological Summary of Public Involvement During 90-day LMP Review Period (January 11 - April 29, 1985)

January 11, 1985

Began sending DEIS and Plan documents to key contact participants, including elected officials, federal and state agency representatives, and other individuals who had previously requested copies when available.

January 14, 1985

Mailed query letters (approximately 1,000) to individuals and agencies on ANF mailing list asking if they wished to receive copies of documents.

January 14, 1985

Forest Supervisor met with Congressman Clinger's legislative assistant and presented draft documents.

January 16, 1985

News release announcing availability of planning documents sent to 225 on news media list. The news release also mentioned that a public information meeting would take place on February 14, 1985.

January 18, 1985

Notification of availability of planning documents published in Federal Register

January 24-25, 1985

Planning Staff met with ANF personnel to discuss the Plan.

Issues, Concerns, and Opportunities

January 30, 1985

Mailed news release announcing public information meeting scheduled in Warren on February 14, 1985.
February 5, 1985

Met with key contact participants at DuBois, PA, to discuss the planning documents.

February 12, 1985

Forest Supervisor met with legislative aides of Senators Spector and Heinz in Harrisburg, PA.

February 14, 1985

Public information meeting in Warren, PA, to discuss planning documents.

March 11, 1985

News release announced that review period had reached halfway point.

April 6, 1985

Public Affairs Officer appeared on a talk show on WTAE-TV, Pittsburgh.

April 29, 1985

End of public review period.

Chronological summary of information meetings held at special request during the public review period.

January 23, 1985

Planning Staff met with Warren Chamber of Commerce to discuss the Plan.

February 4, 1985

Bradford District Ranger met with Bradford Naturalist Club to discuss the Plan.

February 13, 1985

Ridgway District Ranger met with Summit Grange of Ridgay to discuss the Plan.

February 15, 1985

Met with 10-county industrial development group to discuss the Plan.

February 19, 1985

Met with Seneca Highlands Tourist Association in Kane, PA, to discuss the Plan.

February 21, 1985

Wildlife Staff met with Pennsylvania State University Student Chapter of the Wildlife Society at State College, PA, to discuss the Plan.

March 18, 1985

Met at Clarion University with representatives of Clarion County Sportsmen, National Audubon Society, Trout Unlimited, and the Wild Turkey Federation.

March 28, 1985

Met with representatives of the Society of American Foresters, Pennsylvania Division, to discuss the Plan.

April 1, 1985

Bradford District Ranger met with Bradford Naturalist Club a second time to discuss the Plan.

April 5, 1985

Ridgway District Ranger discussed Land Management Planning with a local chapter of the Society of Manufacturing Engineers.

April 12, 1985

Met with timber industry representatives from Allegheny working circle to discuss the Plan.

April 18, 1985

Held second meeting with area timber industry representatives.

Post Public Comment Period Activities (April 30, 1985-January 30, 1986).

Following the close of our public comment period, all letters and petitions were read and the substantive comments grouped by subject matter. This process is discussed in Appendix C. As comments were reviewed, however, it became apparent that additional public contacts would be necessary to clear up misunderstandings, clarify proposed changes, and/or discuss possible solutions. The following is a list of the major parties contacted.

- Allegheny Forestry, Inc.
- Allegheny Outdoor Club
- Allegheny Society of American Foresters
- American Motorcycle Association
- Appalachian Mountain Club
- Audubon Society of Western Pennsylvania
- Cooperative Extension Service
- Bill Graham
- Hammermill Paper Company
- James E. Wilhelm Memorial chapter, National Wild Turkey Federation
- Kane Fish and Game Club
- Kinzua Dam Vacation Bureau
- League of Women Voters of Warren County
- Mr. R. E. Leslie
- Mallery Lumber Company
- Nancy G. Tilghman
- Natural Resources Defense Council
- New York State Office of Parks, Recreation, and Historic Preservation
- Penntech Papers, Inc.
- Pennsylvania DER Secretary's Office of Policy
- Pennsylvania Fish Commission
- Pennsylvania Game Commission
- Sierra Club, Lake Erie Group, Pennsylvania
- Sierra Club, Moshannan Group, Pennsylvania
- Sierra Club, Pennsylvania Chapter
- Southern Tier Natural Resources Conservation Council

- Bruce Sundquist
- U.S.D.I. Office of the Secretary
- U.S. Environmental Protection Agency
- Warren County Chamber of Commerce
- Warren County Council of Sportsmen
- Western Pennsylvania Conservancy
- Wildlife Management Institute

B. CONSULTATION WITH OTHERS

SUMMARY OF THE PROCESS STEPS USED TO IDENTIFY CONSULTATION NEEDED

Consultation with the public is a significant part of the land management planning process. As the first step, the Forest Supervisor developed a list of the agencies and organizations to contact as part of the planning process. This list was sent to the District Rangers and Staff for their review. After their additions and deletions, the Forest Supervisor assigned one District Ranger or Staff Officer the responsibility for contacting each person on the list.

CONSULTATION WITH AGENCIES AND INDIAN TRIBES

Table A-1 lists the agencies and organizations we have contacted and/or consulted during the planning process. Each was contacted at least once, either orally or in writing. We asked many of the agencies to participate in public meetings. We wrote to the agencies and tribes and asked them to let us know if they needed a more in depth coordination effort from us. In all cases their response was negative. We reviewed the following agency plans in detail looking for potential conflicts and needs we should address during our planning effort:

- Allegany State Park Land Management Plan
- State Forestry Plan for Pennsylvania
- State-wide Comprehensive Outdoor Recreation Plan (SCORP) for Pennsylvania

CONSULTATION WITH LANDOWNERS

The Forest has attempted to contact adjacent landowners through several approaches.

- Landowners on the current mailing list were contacted June 2, 1981 for identification of new issues.
- The Forest Supervisor, District Rangers and Staff developed a list of contacts which included major adjacent landowners. Each was contacted by letter as well as telephone calls or personal visits during the spring of 1982.
- News releases were sent out at several points in the planning process to the local and regional newspapers, magazines, radio and television stations in an attempt to inform adjacent landowners and other interested public.

Table A-1

Public Agencies, Indian Tribes, and Legislative Delegations

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
PA DER Bureau of State Parks Mr. William C. Forrey, Dir. P.O. Box 1467 Harrisburg, PA 17120	Adm Bur. of State Parks PA DER Coordinate LMP with SCORP	Recreation supply and demand information. ORV Trail Mileage--all recreation activities--private development
PA Trails Advisory Comm. Dept. of Environ. Resources Div. of Outdoor Recreation	All kinds of recreation trails. State Trails Advisory Group. Recreation Staff office is a member	Can provide supply and demand information for all kinds of recreation
PA Environ. Master Plan Policy Keith Gentzler, Chief Div. of Policy Planning and Project Review Bureau of Environ. Resources P.O. Box 2357 Harrisburg, PA 17120	Natural, wildlife primitive areas, wilderness	Can provide supply and demand info--areas of Natural, wild, primitive, area. Wilderness in state of PA
Chapman State Park Mr. Robert Peppel, Supt. R.D. #1, Box 1610 Clarendon, PA 16313	Adm. of State Park and coord. of recreation	Same as above
Cook Forest State Park Mr. Karl Schlentner P.O. Box 120 Cooksburg, PA 16217	Adm of State Park and coord. of recreation	Same as above
PA Soil & Water Commission and DER Water Quality Agency	Mgmt. of Water quality in COWAMP. Federal Water Quality Standards, Stream Classification and Effect on all land uses. Monitor Soil Erosion.	Provide tolerable level of water pollutants. Provide erosion control guides
PA DER Bureau of Forestry #15 Bob Lewis		Fire I&DC

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NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
PA DER Bureau of Forestry #14		Cornplanter State Forest Mgmt., Land adjacent Adjust forestry boundary Fire I&DC
Bureau of Forestry Richard Thorpe, State For. P.O. Box 1467 Harrisburg, PA 17120	State of PA Natural Areas Program Coord. LMP with State Forestry Plan (Part of RPA Legal requirement)	Information, description, and location of State of PA special areas.
PA DER Bureau of Forestry Mr. Robert Martin, Dist. For. P.O. Box 327 Emporium, PA 15834	Forest Management, DER, Bureau of Forestry, ANF Area	ORV Trail Mileage Snowmobile Use Fire I&DC
PA DER Bureau State Parks Mr. Roger Fickes 8021 Evangelical Press Bldg. Harrisburg, PA 17120	Scenic River & Trails Mgt: PA DER We promised to deal with State inventory if W&S River is on LMP and coordinate. See correspondence. Allegheny River W&S-Mgmt. Plan Alternatives	Recreation supply/demand infor. Miles of ORV trails, Hiking trails-State System-Cross Country Ski Trails, Wilderness Mgmt.
PA Comprehensive State-wide Recreation Plan Keith Gentzler, Project Coord. Dept. of Environ. Resources Bur. of Environ. Planning P.O. Box 2357 Harrisburg, PA 17120	Statewide Outdoor Recreation Plan (SCORP)	Coordinate relating agency policies, etc. Can provide recreation activities, supply and demand info. other than State of PA
Allegany State Park and Recreation Comm. Hugh J. Dunne, Reg. Adm. Salamanca, NY 14779	Adm. of Allegany State Park, State of New York adjacent to ANF. North end of Allegheny Reservoir	Recreation Supply and demand information--all recreation activities--miles of ORV trails Cross country ski trails
Legislative Kusse Peterson Mackowski		

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
Agricultural Ext. Service R.S. Cochran Elk County Courthouse Ridgway, PA 15853	County Extension Agent Recreation use	Recreation Supply and demand information. ORV trail mileage
President Warren Co. Assn. Township Officials and Key Supervisors	Snowmobile Policy Transportation System Plans-weight/road Design consistency w/USFS PILT Social-local economic effects	Zoning and land use planning
President Forest Co. Assn. Township Officials and Key Supervisors	Same as above	Same as above
President McKean Co. Assn. Township Officals and Key Supervisors	Same as above	Same as above
President Elk Co. Assn. Township Officals and Key Supervisors	Same as above	Same as above
McKean County Planning Comm. Terry L. Hess, Director Court House Smethport, PA 16749 & Commissioners	County land, management, and planning. Recreation Planning	Provide recreation, supply and demand info. Devel. of recreation Facilities within County Miles of ORV trails
NW PA Regional Planning Comm.	Regional Planning's Social/Economic (Environmental/Industrial)	Provide any input on how LMP may affect their planning efforts Timber resource WL resource Soil and Water resource
NC PA Regional Planning Comm.	Same as above	Same as above
Warren Co Planning/Zoning Comm. Mr. Dennis Whipple Court House Warren, PA 16365 & Commissioners	Warren County LMP	

Issues, Concerns, and Opportunities

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
Elk County Planning Comm. Elk County Court House Box 466 Ridgway, PA 15853 & Commissioners	County Planning, Recreation development on County lands.	Recreation supply and demand Miles of ORV trail. Private recreation
Cattaragus Co. Planning Board Dolf L. Bonenberger, Dir. 303 Court Street Little Valley, NY 14755	Recreation planning and fac. in Cattaragus Co., NY next to A.N.F.	Recreation supply and demand. ORV trail mileage. Development in Allegheny Reservoir.
Environmental Protection Agency	Monitor air quality Ohio power plants Enforcement of Federal water quality	Provide air quality standards which will control count of sulphur dioxide in air, and in turn, amount of acidic rain
Soil Conservation Service		Soil Survey and Mgmt. Small watershed? Erosion/Sedimentation laws
Forest County Planning Commission, Forest County Courthouse, Tionesta, PA, & Commissioners	County Land Management and Planning, Recreation Planning	Recreation Supply & Demand, Dev. of Recreation Facilities in County, Miles of ORV Trails
USDI Bureau of Mines OFC of Chief, E FLD OP CTR 4800 Forbes Avenue Pittsburgh, PA 15213	Mineral Inventories	Mineral supply & demand in special areas Wilderness, RARE II etc.
US Forest Service State and Private Dr. David Marquis Forest Service Lab North East Experiment Station Irvine, PA 16329	Research Project Leader--Tionesta Research Natural Area. Research in Silviculture visual management.	Can provide research info. Supply & demand concerning Recreation use in Tionesta Research Natural Area

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
U.S. Army Corps of Engineers 1000 Liberty Ave., Fed. Bldg. Pittsburgh, PA 15222	Recreation Management Corps of Engineers Lands Reservoir Management Fisheries Water Quality, Flood Control	Recreation Supply and Demand Information-miles of Trails-ice fishing Sport Fishing-Boating-Trails Kinzua and Tionesta Reservoir Regulations and management Plans.
U.S. Fish and Wildlife Service Norman Chupp, Area Manager 100 Chestnut St., Room 310 Harrisburg, PA 17101	Manage fishery resource in cooperation with Pennsylvania Fish Comm. Creek census Kinzua Dam/River	Recreation Supply and Demand Sport Fishing-Ice Fishing-Boating Developed Sites Rare and Endangered Recovery Plan if we have role Commercial fish and wildlife opportunities if any
USDI National Park Service Public Affairs Office	Indian Affairs--Seneca Nation of Indians	
USDI -- Indian Affairs Federal Building, Room 523	Indian Affairs	
Seneca Nation of Indians P.O. Box 231 Salmanca, NY 14779	Represents Seneca Nation of Indians Management of Reservation lands adjacent and within the Forest boundaries.	Provide ORV trail mileage, supply of recreation opportunities. Encourage recreation development on reservation land. Employment, social effects Archeological conflicts.
City of Bradford		Water Supply land adjustment. Adjust Forest boundary.
Borough of Warren, Tidioute		Land Adjustment Allegheny River Wilderness

Issues, Concerns, and Opportunities

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
Borough of Ridgway		Water Supply Ridgway Reservoir Fisheries, recreation
Pennsylvania Game Commission	Manage State Game Lands within and adjacent to Forest boundary. Management wildlife habitat through cooperative program on the Establish hunting and trapping seasons, bag limits and enforce them, protection of birds and animals.	
PA Game Commission	Coop. Mgmt. of WL, Coop $ Habitat on A.N.F. Develop clear population objectives and habitat prescriptions for key species	Loleta Dog Trail Sykes Act agreement Provide guidelines for WL management with OGM activity and road densities. Development bear habitat management plan, objectives and regulations.
PA Fish Commission Mr. Ralph Abele, Exec. Dir. P.O. Box 1673 Harrisburg, PA 17120	Establish fishing seasons, creel limits, and enforce them. Protection of Fish, reptiles, and amphibians.	Boating regulations, on Reservoir Fish Comm., Access and coordination. Designation of new special fishing areas or regulations. Fly fishing, handicapped, youth/aged, trophy, and wild trout stream.
PennDOT		Transportation Analyze Major State Access Road Plans Forest Highway Funds and Plan

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
PennDOT (con't)		Signing & Maintenance
		Bonding timber/OGM haul
		Snowmobiling
		West Side Reservoir Access
		North-South Access Highway Mid-Forest
		Rebuild Rt. 666 West for timber access
		Pave Hearts Content-Sheffield Highway
		Cross Forest Highway-Tally Ho - Red Bridge: Twin Lakes - Dahoga Mayburg - 337 Connection
		USFS turnovers to State
Others Consulted		
Collins Pine		
Novosel Land Company		
Pennzoil Company		
Warren Water Company		
Forestry Industry Committee (Sandy Wolffinger)	Harvest Forest products	Provide information on acceptable level of WL habitat conflicting with the supply.
Forest Industry Committee		Cherry monotype in future swt. markets.
POGAM (Texas Gulf, Quaker State, and Pennzoil) Ipsco, National Fuel Gas, Columbia Gas, Pa. OG&M Assn)	OGM development and gas	Obtain their concern to protect WL habitat US oil & gas Cooperative Development Planning Process. Long-range information on OGM reserves.

Issues, Concerns, and Opportunities

NAME/ADDRESS	KEY TASKS	TYPE OF INFORMATION
Others Consulted (con't)		
PA State Snowmobile Assn. P.O. Box 456 Marienville, PA 16239	Organization of Snowmobile Clubs in State of PA Office of Executive Secretary is in Marienville, PA Strong interest in snowmobile development in A.N.F.	Can provide supply and demand information. Snowmobile trail mileage.
National Fuel Gas Supply Corp. P.O. Box 397 Oil City, PA 16301	Management OGM in Tionesta Scenic and Natural Areas	Information on OGM reserves and value in special areas.
Hammermill		
Texasgulf		

C. SELECTED ISSUES, CONCERNS, AND OPPORTUNITIES

1. SUMMARY OF THE SCREENING PROCESS USED TO NARROW THE SCOPE OF THE ICO'S

The contacts we made with the public resulted in numerous written replies containing many responses on individual issues and concerns. We also received ICO's from Forest Service employees. We dated and coded each ICO response as we received it. Then we reviewed each issue and answered the following questions:

Who has authority to resolve the ICO?

ANF Forest Supervisor

The Forest Supervisor of the Allegheny National Forest has authority to resolve these ICO's and they are relevant to this planning process.

Forest Service

These issues are more appropriately resolved at the Regional level of the Forest Service or could be addressed by the Research Branch.

Other Authority

The Forest Service does not have legal authority to address or comment on this issue, and the issue is not relevant to the Allegheny National Forest. Refer to the appropriate agency or group if known.

Does resolution of ICO relate to an operational action or to a resource allocation/scheduling action?

Forest Planning

The ICO will be resolved through the Forest planning process of land and resource allocation or scheduling.

Operational - The ICO can be best resolved through some operational method or approach and will be referred to the appropriate Forest staff for consequent action.

After answering the questions listed above, the Interdisciplinary Team placed each ICO into one of the three categories which follows:

- ICO's deferred from the Land Management Planning process,
- ICO's addressed the same in each Plan alternative,
- ICO's addressed differently in each alternative.

After scoping the issues, the Interdisciplinary Team presented the results to the Forest Management Team for approval. The Management Team accepted most of the recommendations, but decided to address some of the public's issues and management concerns as operational problems. Table A-4, page A-36, includes a summary of the more significant ones.

2. MANAGEMENT PROBLEMS

From the list of issues we had decided to address differently in each alternative, we grouped those which seemed to be related into a logical set of six management problems. A management problem is a statement describing conflicting values people have about management of the Forest or the outcomes desired from Forest mangement. After grouping related ICO's into management problems, the Interdisciplinary Team members and one of the Staff Officers developed written definitions for each management problem. We then distributed these for review to each member of the Mangement Team. After we completed the revisions they suggested, we submitted the management problem descriptions to the Regional Office for review. Following this, we had the management problems needed to begin the analysis process. We revised them several times as we progressed through the analysis process or after receiving new ICO's from the public.

3. PUBLIC ISSUES GUIDE THE PLAN PROCESS

The National Forest Management Act regulations define forest planning as an issue driven process. Public comments-issues-management problems guided the Allegheny Planning Team through the next planning steps. Issues or the management problems helped identify the information or data the decision-makers needed to consider when selecting a preferred alternative. Issues provided the planning team information on what analysis area identifiers would be most useful. Issues suggested the benchmarks needed to display the maximum and minimum amounts that planning could practically consider in response to a specific planning question. Issues suggested the attributes that should be incorporated into alternatives. Finally, issues suggested what constitutes public benefits, the major consideration in selecting the preferred alternative.

How well the planning process responds to public issues will be judged by the public, the authors of the issues. The Draft Environmental Impact Statement related the information considered by the decision-makers, and gave the public the chance to make their own evaluations about the accuracy and range of information considered. The Final Environmental Impact Statement responds to any new issues developed during the public review period and has related them to the final decision.

4. TRADE-OFFS

The management problems guided the formulation of alternatives. While one specific alternative may provide the "best" response to a single problem, each alternative satisfies all problems to some degree. The interrelationship between resources or the limits imposed by a fixed land base creates a situation where the gain to one resource interest becomes a loss to another. The difference between the "best" response to a resource question and that provided by some other response recognizes the trade-off for that resource between responses to all of the problems. The trade-offs between interests is one criteria used when selecting the preferred alternative. Trade-offs within and between issues are described in the management problems in section 5b of Appendix A which follows. Appendix B contains a summary of the quantitative effects of these trade-offs, while Chapter 4 describes the qualitative effects.

5. ISSUES, CONCERNS, AND OPPORTUNITIES ADDRESSED

<u>ICO's Addressed Differently in Each Plan Alternative</u>

Table A-2 lists the ICO's addressed differently in each plan alternative. Standards and guidelines, management direction, or amount of activities or outputs relating to these issues do vary significantly between plan alternatives. The following legend defines the codes used for the management problems:

Problem #1 - Providing Developed Recreation,
Problem #2 - Providing Dispersed Recreation,
Problem #3 - Timber Management,
Problem #4 - Wildlife Habitat,
Problem #5 - Private Oil and Gas Development,
Problem #6 - Wilderness.

Table A-2 - ICO's Addressed Differently in Each Alternative

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
1, 2, 3, & 5	Is it necessary to keep open and maintain so many roads? Coordinate with oil and gas roads
1	Expand role of nature interpretation and education. For example, senior citizens in nature appreciation
3	Emphasize growth of high-quality hardwood with uneven-aged predominant cutting system. Small area cuts
1, 2	Overuse of popular recreation sites
1, 2	Allegheny National Forest emphasizes dispersed, low-density, non-motorized recreation - private sector supply the campgrounds and motorized facilities outside Forest
3, 6	Establish baseline - area of Forest that will proceed through natural succession - for measurement of performance and natural diversity
3, 4	Bring savannah stands back to timber production
2, 6	Some areas managed to minimize human impact but not removed from management
2, 3, 4, & 6	Concern Forest will only be looked at as a source of commodities when it should also be considered as a source of "natural environment"
6	Wilderness classifications vs. multiple-use concept
3	Study not only commercial species but others to get an ecological diversity
2	Provide areas for observation, study, and appreciation of nature and wildlife with emphasis on site micro climates
3	Allegheny National Forest should start spraying to control fern

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
5	No area of the Allegheny National Forest should be exempt from oil and gas exploration
3	Chemical control of understory vegetation
3	Demand for firewood is outstripping our ability to supply
3	Keep roads open to get firewood
1	Convert barn at Tionesta into a lodge
2	Control/stop dispersed camping
4, 6	Wilderness designation is the best land use in trout stream watersheds
1, 4	Developed recreation sites cause reduction in wildlife habitat
4	We are losing small-game species due to improper habitat management practices
2	Need areas which are not accessible by road or motorized vehicle. Roadless area or wilderness experience not suitable
1, 2, 6	Provide a variety of recreation opportunities
2, 4	Road and trail location and management and its effects on wildlife, recreation experience (fishing, hunting) and streams
4	Conversion of mixed hardwood to pure hardwood (monoculture) and effect on wildlife diversity and esthetics
1, 2, 3, 5	Road density and management
1, 2	Increase time and money spent on recreation areas outside of Reservoir
6	All areas in Bill of 1979-1980 HR 5488 (33,700 acres Islands, Cornplanter, Tracy Ridge, Allegheny Front, Hickory Creek, Sandstone Spring) should be considered "Wilderness"

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
3, 5	Continue to strive for better age class distribution forest-wide
4	Availability and distribution of "other" important wildlife habitats
3	Inflated costs of planting in minds of land managers
1,2,3,5 & 6	Acquisition of land and subsurface rights by Federal Government
6	Amount of acres designated wilderness on Allegheny National Forest
3	Quality of timber sales is declining because we are running out good sites
3	Control of fern and striped maple needed
1, 2	Protect scenic highways within Reservoir complex
4	Increasing road construction may lead to over harvest of wild turkey and bear
1	No increase in number of camping spaces but expand services
1, 2, 3, 5	Accessibility into the Forest is increasing
2	Protect Allegheny Reservoir shoreline
2, 3	Provide back country areas with rotating mgt. periods for timber and wildlife and dispersed non-motorized recreation
2, 4	Provide maximum recreation use of wildlife by increasing access to appropriate areas
2	Allegheny National Forest should emphasize quality of experience and "resource protection based" hunting and fishing programs
6	Wilderness is waste of valuable resources
3	Timber resource should be managed and harvested

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
2, 3	Conflict between quest for solitude & development
3, 6	Withdrawal of large areas from timber production
3	Control of fern/striped maple needed
6	Change wilderness definition to allow wider range of recreation and resource uses
3, 4	Establish and maintain diversity of habitats thru variety of age classes
1, 2, 6	Acquire mineral rights to highly sensitive areas, Hearts Content, Tionesta Scenic and Natural, slopes of Reservoir, proposed wilderness areas
1, 2, 3, 5	Allegheny National Forest road system should be considered complete. In timber sale areas, roads too long to close, and too high standard
4, 2, 3	Gates on Forest Service roads
4, 2, 3	We are gating too many roads
4	Encourage monitoring of fish and wildlife
3, 4	Plan timber and wildlife management practices simultaneously
4	Our current wildlife management policy is concentrated on deer and turkey and should be more geared to managing the entire ecology system
2	Need to preserve some areas of forest for future generations
1, 2	Increased recreational use has potential to damage watersheds
4	Concern that wildlife will lose their freedom
2	Provide cross-country ski trails
4	Population of scarce game are in danger of decreasing due to hunting

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
6	Set aside areas for wilderness, scenic, biological preservation
2	Conflict between ORV use, cross-country skiing, and hiking
4	Protect wildlife and fish habitats
3	Enhance growth of the more desirable stands
3	Reduce the present cut, acid rain may reduce productivity
6	Forest Service should make wilderness only one option of multiple-use management for specific areas
2	Like marked loop type horse trails about 10-20 miles in length with parking
1, 2	Appropriate mix of developed and dispersed recreation opportunities
1	Keep Kelly Pines campground primitive
3	Cherry monoculture developing on Allegheny National Forest. Increase softwood production and maintain diversity of oak
6	How much wilderness is enough for the Allegheny National Forest
3	Increase rotation age of hemlock, beech, and sugar maple to 120 years
3	Lack of regeneration
4, 6	Consider old growth, inland wetlands, and critical wildlife and fish habitats for designation as wilderness, to protect them
1	Additional development and camping spaces should come from private sector and private land
2	Management of North Country Trail particularly retention of scenic qualities (National Scenic Trail).

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
3	Cut timber when top value
1,2,3,4,5, & 6	Allegheny National Forest has positive effect on communities; jobs are obvious; atmosphere created by presence of forest not so obvious
4	Increase wildlife habitat management and improvement
2	Develop cross-country ski trails
2	Develop more hiking trails
1, 2	Appropriate level of commercial development around Allegheny Reservoir
3	Use of pesticides and chemicals for weed and rodent control should be considered
2	Maintain wild quality of the existing Allegheny National Forest
3	Regeneration of commercially valuable tree species
3	Age class distribution affect on composition and productivity.
1, 2	Improve quality and quantity of information to public visitors
3, 4	Management of timber resource should be compatible with all wildlife species
2	Provide cross-country ski trails to supplement private touring centers. Presently not meeting demand
1, 2, 3	Recreation secondary to production of timber
3	Age class distribution effect on composition and productivity.
1	Over development by Forest Service and competing with private enterprise in recreation development

MANAGEMENT PROBLEM WHERE ADDRESSED	ISSUE, CONCERN, OR OPPORTUNITY
1, 2	Cooperate with user groups only on request. Avoid seeking out
1, 2, 3, 5	Too many roads being built
1, 2	Forest Service should not expand control to other properties
2	Current ORV too costly, poorly located, and designed for more experienced riders only
2	Aren't any trails for Attex 6 wheel machines
2	No more motorized trails on Forest
2	Off-Road Vehicle Plan is not being implemented in a timely manner
2	Snowmobile is not an off-road vehicle - it's non-destructive so increase Allegheny National Forest lands available to such use
2	Only minor expansion of off-road vehicle trails needed
2	Continue and expand grooming of snowmobile trails
2	Phase out ORV trails
2	Do not locate ORV trails on Forest Service roads because it restricts timber operations
2	Closing roads for ORV restricts other users
2,5	ORV's and oil and gas vehicles are causing soil erosion
2	Trail bikes intrude upon solitude of Forest
2	Off-road vehicles use should not cross streams
2	Develop more motorcycle trails away from roads and oil and gas drilling
2	ORV program should conform to EIS
2	Current ORV too costly, poorly located, and designed for more experienced riders only

b. Problem Statement and Major ICO's

PROBLEM 1 Providing Developed Recreation

Recreation on the ANF is an important public benefit. During the 1960's, recreation opportunities expanded rapidly with construction of the 12,000-acre Allegheny Reservoir and its modern national forest campgrounds and boating facilities.

Currently, these campgrounds around the reservoir are often full, and on most summer weekends boating facilities are busy, although not crowded. More rustic campgrounds elsewhere on the Forest have fewer campers, but these campers are those who value their solitude. Only one national forest campground is available along the Clarion and Allegheny Rivers, or along Tionesta Creek. Private, State, and Corps of Engineers campgrounds are also located along these rivers and creek.

People do disagree about the need for new campgrounds -- either modern or rustic -- or for additional boating facilities. They also disagree about whether these facilities should be financed by the Allegheny National Forest or by private investors.

Allegheny Reservoir

Some citizens believe that the reservoir can accommodate even more modern campgrounds and boating facilities. They believe that more development should occur and that the scenic beauty can be retained if development is carefully planned. Development would create new jobs, raise local income and revenues, and satisfy users who prefer comfortable, modern campgrounds.

Other citizens believe that the undeveloped character of the reservoir is unique in the Eastern U.S. and that its scenic qualities should be preserved.

Allegheny and Clarion Rivers and Tionesta Creek

Boating and fishing on these streams is increasing, but public boating access points and campgrounds are not always available along the streams.

Public or Private Financing of Recreation Facilities

Historically, the Allegheny NF has financed construction of all recreation facilities and has operated most facilities, except for the marina on the Allegheny Reservoir. In the future, however, private corporations may become involved in the construction and operation of both existing and planned recreation facilities.

Opportunity for Resolution

Analysis indicates an opportunity to more than triple the potential for recreation use, particularly from the Allegheny Reservoir, Allegheny and Clarion Rivers, and Tionesta Creek. Projected demand for facilities, such as campgrounds, boat access, and rustic resorts, can be met, but meeting the demand would require capital investments in facilities. This could be accomplished with public funds, private capital, or some mix of the two.

PROBLEM 2 Providing Dispersed Recreation Opportunities

Dispersed recreation includes hiking, hunting, fishing, berry picking, bird watching, and photography. These activities usually depend upon solitude and a natural-appearing forest, so unnecessary roads and trails, as well as unsightly timber harvests, are likely to annoy members of the public who are interested in these dispersed recreation activities.

Because of increased timber harvesting and oil and gas development, vehicular access to the Forest has increased. With this access, opportunities are declining for those who prefer forested areas which offer solitude, few encounters with other forest users, and natural-appearing landscapes.

Alternatively, many people engaged in other dispersed recreation activities including trail bikers, snowmobilers, hunters and fishermen, often rely on roads and trails when they visit the Forest. They do not venture far from their vehicles, and meeting other Forest visitors may even increase their satisfaction. For them, many roads and trails are crucial to their enjoyment of the Forest.

ORV users continue to desire use of designated roads and trails in a natural-appearing landscape. Location of those routes in relation to active oil and gas developments and timber sales is important to their satisfaction.

Opportunity for Resolution

Analysis reveals that demand exceeds the supply for all levels for dispersed recreation activity.

However, opportunities for recreation in a setting of solitude, free from human disturbance, are limited because of the extensive road system and oil and gas development. Conflict between desires for motorized and non-motorized activities will continue in the future.

Analysis of the ORV issues indicates that the policy and management direction of the 1977 ORV Plan and environmental impact statement is adequate. The issues relate to amount of trails, location, and cost of trails and not the basic policies and direction. Opportunity exists to vary the amount of motorized trail to more than double the existing mileage.

PROBLEM 3 Timber Management

Timber on the Allegheny NF is a valuable economic resource, especially the many stands of high-value black cherry trees. Actually, the Forest contains a significant portion of the world's supply of black cherry, so timber harvests are economically important. Historically, however, much of the timber on the Forest was harvested in the late 1800's and early 1900's. Most of the timber on the Forest will be mature and ready for harvest during the next two to three decades.

The first management question, then, is what timber volume to harvest during each decade. The second question is how to quarantee that healthy seedlings replace trees harvested. Currently, seedlings often die from competition with dense understories of striped maple or beech, fern toxins, and the many deer that eat seedlings.

Timber Volumes

The National Forest Management Act directs each national forest to provide total timber volumes that do not decline from one decade to the next. Yet because most timber on the Forest is close to mature, timber sale volumes may decline if large volumes are harvested all at once when trees are financially mature (60 to 90 years old).

Actually, other management strategies are open to the Allegheny NF.

For aesthetic reasons, the Allegheny NF could allow trees to grow beyond their financial maturity to a maximum of 120 years old. Such large trees may enhance the appearance of the Forest, but the delay in harvesting would decrease financial returns. For economic reasons, the Forest could maintain non-declining sawtimber volumes, yet still allow total timber volumes (sawtimber plus lower-quality pulpwood) to fluctuate.

Understory Problems

Before trees can be harvested, managers must be assured that seedlings will replace the harvested trees. Two related problems frequently prevent new seedlings on the Forest from replacing harvested trees.

First, deer populations have remained unacceptably high for a long period of time. Because the deer eat tree seedlings, acorns, as well as shrubs and grass, their grazing has altered the natural vegetation on the floor of the forest. They frequently eat enough tree seedlings to prevent the establishment of young trees. Seedlings can be protected from deer by fencing and other control measures, but the costs are very high.

Second, an estimated 50 percent of the forest floor on the Allegheny NF is covered with a dense understory of fern and striped maple. On these acres, this understory combined with excessive deer browsing is sufficient to prevent the growth of black cherry seedlings and other desirable seedlings.

The only cost-efficient treatment of this dense understory is to use herbicides to kill the fern and striped maple.

Opportunity for Resolution

Analysis reveals that the level of timber harvest on the Allegheny National Forest could increase to more than double the current harvest level. The amount of high-quality hardwood sawtimber produced on the Forest is likely to be sold. Domestic and international

markets for hardwoods, such as black cherry and oak, will remain strong. The demand for pulpwood is expected to remain less than the supply from the Forest.

Analysis also indicated that the level of timber harvest and the methods for managing timber are directly related to other management problems, such as access for dispersed recreation and provisions for wildlife habitat.

PROBLEM 4 Wildlife Habitat

The U.S. Forest Service can legally manage only the habitat in which animals live. The State of Pennsylvania is responsible for directly controlling animal population levels.

Historically, the Allegheny NF has relied chiefly on timber harvests to manage vegetation for wildlife. The regeneration harvest method known as clearcutting allows the regeneration of vegetation crucial for animals requiring young vegetation. As a result, hunters have enjoyed high populations of the white-tailed deer.

Recently, the wildlife habitat improvement program has expanded. Management now is emphasizing habitat improvement for game species -- turkey, deer, and grouse.

Wildlife concerns are three-fold: (1) deer populations which exceed the capacity of the land to support them, (2) more roads and trails into prime habitat, and (3) management efforts for small-game and non-game species.

Populations

As mentioned in the Timber Management Problem, deer populations on the Allegheny NF currently exceed the land's carrying capacity. For lack of food, deer are small and have poor antler development. Deer also eat so many tree seedlings that expensive measures, such as fencing, must be used to protect seedlings until they grow above the deer's reach. Finally, deer have modified the natural understory of the forest, and wildlife species, such as rabbits, dependent upon a rich variety of understory vegetation have declined.

The Allegheny NF and the Pennsylvania Game Commission have agreed to limit levels for deer, and progress is being made towards achieving these population levels.

Once the deer populations are nearer to those levels, recovery of the understory vegetation may still take twenty to thirty years.

More Roads and Trails

Roads and trails associated with timber harvests and oil and gas developments have significantly opened up prime wildlife habitat. Such access allows animals to be disturbed during brooding seasons and to be hunted extensively during hunting seasons. Such disturbances are particularly bad for some species -- for instance, the wild turkey. (These wildlife impacts are in addition to those that detract from dispersed recreation, as discussed in Management Problem 2 Providing Dispersed Recreation).

Small-game and non-game emphasis

Some citizens would like the Allegheny NF to increase management emphasis on rabbits, squirrels, and grouse, as well as such non-game animals as songbirds and hawks. They are also concerned about the increasing number of black cherry trees on the forest and their effect on habitat for small-game and non-game.

Opportunity for Resolution

Analysis shows that providing for future wildlife habitat depends on diversity of vegetative conditions and on road access and road use. Timber harvesting is the most effective method for influencing future changes in wildlife habitat. Analysis also shows that opportunities for timber harvesting is more than enough to meet desired regeneration acreages.

There are several alternative methods for financing wildlife habitat improvement projects: Federal money, volunteer work, and cooperative work completed on the Alegheny National Forest by the Pennsylvania Game Commission. Another approach we are proposing in some of the alternatives is a hunting and fishing licence, for those who ntend to hunt or fish on the Allegheny National Forest. The revenues from the stamp would finance wildlife and fish habitat improvements, stocking programs, census taking, and law enforcement on the Allegheny, allowing the users rather than the taxpayers to pay a substantial part of the bill. (Since this is

more of a political issue and the Allegheny has little control of the outcome, we did not include any revenues from this proposal in the economic analysis for the two alternatives which include it). The discussion in Chapter 2 briefly discusses the approach for each alternative.

PROBLEM 5 Private Oil and Gas Development

This nation's oil industry began one hundred and twenty-five years ago within a few miles of the Allegheny NF. Extensive oil and gas deposits still underlie the national forest.

To date, ten percent of the Forest's surface area has been developed for oil and gas. The private sector owns nearly 96 percent of the oil and gas rights, and the owner establishes the schedule and timing of development. The Allegheny National Forest encourages mineral resource development and works cooperatively with the owners to reduce surface resource impacts. Some of these impacts may be reduced by relocating a roadway, moving a drilling site, or applying additional road surfacing material.

Public concern about the effects of the development are high. Oil and gas development requires road access which, if done cooperatively with the Forest Service, often results in lower costs for both parties. But the roads disturb wildlife habitat and opportunities for recreation in a natural-appearing forest. If done improperly, oil and gas development can also cause sediment and chemical pollution of streams and, thus, be harmful to aquatic life and to humans. Development also removes timber land from production during the period of oil and gas extraction.

The Allegheny National Forest's policy on private oil and gas development is to foster a spirit of cooperation between the Forest Service and developers. In an atmosphere of cooperation, financial benefits are greatest for both parties and environmental consequences are minimized.

In addition to maintaining this cooperative relationship with the oil and gas industry, the Forest also coordinates, as necessary, with State and Fedeal regulatory agencies. The Pennsylvania Department of Environmental Resources and the U.S. Environmental Protection Agency have primary enforcement responsibilities to environmental protection and oil and gas activities.

Opportunity for Resolution

The Forest predicts the actual rate of oil and gas development may vary between the low and high demand projections, but the average will continue to be closer to high than to low for the next several decades. The Forest Service will not pursue large-scale acquisition of mineral rights. However, the Forest may acquire mineral rights in specific areas to achieve surface management objectives, such as in the Tionesta Research Natural Area, or where Congress directs, such as in Wildenress.

PROBLEM 6 Wilderness

For two decades people have debated whether areas of the Allegheny NF should be designated as wilderness. Such a designation, under the Wilderness Act of 1964, would identify as wilderness those areas possessing unique scientific and research value or unique opportunities for solitude and wilderness recreation.

Two national evaluations have investigated potential wilderness areas -- the first Roadless Area Review and Evaluation, now called RARE I, and then the second evaluation, called RARE II. Under RARE II and the Wilderness Act Amendments of 1975, some 34,358 acres of Forest land were classified according to their wilderness values (see Table A-3). Tracy Ridge and the Allegheny River Islands were recommended to Congress for designation as wilderness. Two other areas -- Minister Creek and Hearts Content -- were recommended for non-wilderness, and all remaining areas were identified as needing further planning. These RARE II recommendations were never acted on by Congress. The Secretary of Agriculture decided to set aside all RARE II recommendations based on a recent California lawsuit.

On October 30, 1984, legislation was passed to establish the Hickory Creek and Allegheny Islands Wilderness Areas. The legislation also designated portions of the Cornplanter, Tracy Ridge, Allegheny Reservoir, and Allegheny Front as the Allegheny National Recreational Area.

Opportunity for Resolution

Congress directed that evaluation of other areas for Wilderness is not necessary at this time. The Wilderness issue is thus resolved for this planning cycle.

Table A-3 Wilderness and National Recreation Areas For the Allegheny National Forest

CATEGORY	ACREAGE
Wilderness	
Hickory Creek	9,337
Allegheny River Islands	382
Allegheny National Recreation Area[1]	
Allegheny Front	7,424
Tracy Ridge	9,188
Cornplanter	3,012

6. ICO's DEFERRED FROM THE LMP PROCESS

Table A-4 lists the ICO's which were deferred from the LMP process. Duplicate ICO's have been dropped from this list. Issues on this list were either:

- referred to another agency for resolution
- referred to the ANF Management Team to be resolved as an operational problem
- referred to the ANF Management Team as an administrative problem
- referred to a research group.

Table A-4 ICO's Deferred from LMP

ISSUE, CONCERN, OR OPPORTUNITY
Need for law enforcement personnel to deal with crime and civil disturbance
Unreasonable regulations for snowmobiling
Cabin permit closures
Degree and kind of law enforcement and regulations necessary to protect resources and visitors
Forest must prevent siltation from logging opertions
Oil and sediment pollution of streams from road construction and maintenance activities

1 The total acreage for the Allegheny National Recreation Area (23,100 acres) includes about 3,500 additional acres adjacent to the major undeveloped areas mentioned.

Issue, Concern, and Opportunity Deferred

ISSUE, CONCERN, OR OPPORTUNITY
Vigorously pursue development of new regulations through DER sponsored committee
Develop inventory of attitudes about "natural environment" role of Forest within "Market Area"
Allegheny National Forest should retain Class II air quality and monitor air quality changes. Emphasize Clean Air & Clear Skies
Sewage treatment plant pollution of surface water
Cultural resources too costly for benefit, need to streamline policy
Acid rain
Springs which have been dug out and built up have not been maintained and are being lost as supplies of water
Planning regulations appear to be too timber oriented
Oil and gas owners reaping benefits without compensating surface owners
Follow through fixing up Wolf Run Marina. All facilities planned. Forest Service should be responsible for fixing up Wolf Run Marina
We are maintaining equipment and generating paper work to deal with fire danger which does not exist. Any necessary fire control should be dealt with by the State.
Loss of turkey in Elk County due to trapping
Quality and quantity of spring water is endangered
Snowmobiles should not ride on roads with cars concurrent automobile use
Personnel section needs to be established
Safety record of Forest employees

Issue, Concern, and Opportunity Deferred

ISSUE, CONCERN, OR OPPORTUNITY
Control the dual use of roads by log trucks and snowmobiles
Local residents' input should have equal or higher weight then non-local input
Stop use of chemicals, pesticides along roads, etc. Control all wastes, poisons, toxins, and pesticides.
Acid condition of streams affecting fish
Do not allow chainsaws in campgrounds
Allowing public to obtain firewood has serious safety, liability, and environmental effects
Limit motorized boat activity on Allegheny Reservoir
Acid rain's affect on trout fishing
Forest Service educate distant users to multiple-use management of forests
Develop practical timber regulations in cooperation with harvesters
Increase research on acid rain
Continue deer studies, cooperate with others
Try direct seeding
Strict controls on pollution
Law enforcement has been neglected. Allegheny National Forest should have law enforcement unit
Maintain or improve water quality
Limit hunting camps to existing
Education of public sector should be top priority
Encourage buffer strips and rules and regulations that affect water conservation

Issue, Concern, and Opportunity Deferred

ISSUE, CONCERN, OR OPPORTUNITY
Senior citizens want a meeting. May lose Senior Citizen Employment Program people.
Closing roads for ORV restricts other users
Forest Service puts too much priority on pleasing special interest groups
Need better planning and thought in locating snowmobile and motorcycle trails
4 x 4 vehicle use causes damage to roads
4 x 4 use causes damage to non-maintained roads resulting in erosion and siltation
Keep motorcycle trails away from intensive drilling areas
Lack of funds make removal of safety hazards from recreation areas difficult
Safety of Forest users in jeopardy
Forest Service should be more in tune with local public
Coordination of planning with other government and private interests
Allegheny National Forest should integrate the Allegheny and Tionesta Reservoir into its planning process
Conservation practices should be taught in school
Supplies of water particularly from springs and wells are becoming scarce
Upstream communities must consider protection of aquatic life downstream when treating waste.
We should sell road front property for people to build on. Property is going to waste with no tax return to township
Lack of law enforcement on districts to control illegal activities (e.g. ORV use)

Issue, Concern, and Opportunity Deferred

ISSUE, CONCERN, OR OPPORTUNITY
Increase law enforcement to protect recreating visitors and resources
Use Management Team to do more project related work
Stop Allegheny Wild & Scenic Rivers Study
Rules and regulations should be enforced to protect natural resources, e.g. prevent unlawful cutting of trees.
Cultural resources too costly for benefit. Need to streamline policy

7. ICO's ADDRESSED THE SAME IN EACH PLAN ALTERNATIVE

Table A-5 lists the ICO's addressed the same way in each alternative. Standards and guidelines, management direction or amounts of activity or outputs relating to these issues do not vary significantly between plan alternatives.

Table A-5 ICO's Addressed the Same in Each Plan Alternative

ISSUE, CONCERN, OR OPPORTUNITY
High population of deer will lead to damage of understory vegetation
Quality and availability of water on the Allegheny National Forest should be protected and promoted
Wilderness management if designated
Lack of controls of oil and gas interests
Oil and gas development causing resource damage and excluding other uses
Unreasonable regulations for snowmobiling
Play structures, boat rentals, and water slide should be added to Beaver Meadows and Loleta
Forest Service acquisition of farm land could lead to loss of a valuable resource. Should be cultivated or reforested
Road closures too soon to use fuel wood

Issue, Concern, and Opportunity Addressed Similarly

ISSUE, CONCERN, OR OPPORTUNITY
Conflict between wilderness users and oil and gas operations
Silvicultural constraints caused by oil and gas activities
Silviculture in high impact recreation areas Cost of providing developed facilities when use is low
Roads built only for timber sales are uneconomical
Oil and gas development continues but with stringent controls
Over browsing by deer will lead to problems in timber management
Roads built only for timber sales are uneconomical
Allegheny National Forest too valuable to be threatened by mineral extraction
Timber sales must have corridors around streams and well-designed haul roads
Protect/preserve the Forest from impacts of oil and gas like oil spills, visual impact, wildlife, wilderness, water quality through strict controls
Cooperative efforts between Game Commission and Forest Service should be encouraged
Promote healthy forest and biomass utilization
Sources of food for wildlife should not be destroyed by livestock
Timber operators cause siltation downstream from stream fords
Maintain optimum water quality to protect and preserve aquatic life
Oil and gas impact on wildlife must be mitigated. Proper development can enhance diversity.

Issue, Concern, or Opportunity Addressed Similarly

ISSUE, CONCERN, OR OPPORTUNITY
Proper retirement and reclamation of oil and gas sites can be asset to wildlife
Range is not applicable to a great degree on the Allegheny National Forest
Oil and gas conflicts with surface highway activities
How to manage proposed wilderness while waiting for Congressional action
Intensive road system in place are more readily needed. If so, what standard is necessary Utilization of low-quality hardwoods
Access recreational and any other activity considering future consequences
Volume and quality of ground water available for wells around potential private or public development
Low-quality wood should be sold for firewood and cut in winter to provide food for deer
Unfair competition between private sector and government due to user fee structure
Inappropriate use of skidding equipment - concern for visual quality and protecting steep slopes
Produce oil from Tionesta Scenic Area - Remove from National Landmark status
Are current standards for timber roads necessary
High numbers of deer are keeping down advanced reproduction, while allowing fern and grass to increase
Increase quality of deer herd not quantity
Wildlife range should take precedence over grazing
Manage cultural resources with zeal - follow recommendations in "Overview" (1978 Contract)

Issue, Concern, or Opportunity Addressed Similarly

ISSUE, CONCERN, OR OPPORTUNITY
Oil and gas and wilderness are not compatible under present intent of the law, and management if designated will be difficult
Recover direct costs of operation and maintenance of recreation areas thru increasing fees.
Both surface and ground water supplies are vulnerable and will deteriorate if drilling (oil and gas) is not regulated
Oil and gas greatest challenge - cooperation needed to develop resource with least possible adverse effect
Reclamation of surface mined land bringing it back to forests again
Oil and gas activities and affect on areas of high visual quality
Do not convert forest into range; limit to existing pasture, detrimental effect on wildlife.
Where providing drinking water, meet Federal and State standards for quality. Protect public health.
Pollution of water. Oil and gas wells are a hazard.
Damage to Forest Service system roads is increasing
Gated roads restrict recreation use
Oil and gas developers gate roads and restrict other surface users
Protect streams from effects of oil and gas and harvesting using buffer zones at least as wide as NFMA regulations
Ground water pollution by oil and gas operations
Is increasing oil and gas activity going to destroy wildlife habitat

Issue, Concern, or Opportunity Addressed Similarly

ISSUE, CONCERN, OR OPPORTUNITY
Deer regeneration carrying capacity
Maintenance and operation of the transportation system

Appendix B is under separate cover

Issue, Concern, or Opportunity Addressed Similarly

APPENDIX C

Response to Public Comment

APPENDIX C

RESPONSE TO PUBLIC COMMENT

This appendix contains the following sections:

A. Introduction

B. Analysis of Respondents

C. Public Comment Summary and Forest Responses

D. Public Agency Comments on DEIS. (reproduction of letters)

A. INTRODUCTION

Comments were extracted or paraphrased from letters and petitions and organized with companion responses by management problem. Every attempt was made to accurately capture each substantive comment and display it in the respective problem statement grouping. Some replies to comments are not published because they are outside the scope of the Plan and EIS. These letters are being responded to by personal letters from the Forest Supervisor.

There is a tie between the responses to public comment and the content of the FEIS and Plan. Alternative changes or modifications were made in Chapter 2, FEIS. Additional detail was added or clarification was made to Affected Environment, Chapter 3 and Environmental Consequences, Chapter 4, FEIS, and changes were made to the standards and guidelines in Chapter 4 of the Plan.

The full text of letters from government agencies and elected officials is reproduced in Section D in accordance with Forest Service policy. This does not impart lesser importance to comments received from non-governmental individuals and groups. These letters are included only to give the reader some idea of what other public agencies thought.

PURPOSE AND VALUE OF PUBLIC INPUT

Comments on the proposed Plan and draft EIS varied from brief statements concurring with the Plan to multi-paged documents that were quite detailed and critical. Some public commenters questioned the value and purpose of planning in general, while others questioned whether their individual input would even be considered. Other commenters asked for a completely different alternative choice or for a major change in the proposed Plan's overall objectives.

This raises an important question: How does the Forest Service use public input in making decisions?

Forest Service decisions are based on five factors: (1) the law, (2) technical information, (3) resource capability, (4) professional judgment, and (5) public opinion. Public opinion and professional judgment enter into the decision-making process when there is room for interpretation in any of the first three factors. Public opinion, for example, would not be a factor in citing a violator of federal regulations, but it does affect decisions about where Forest management could emphasize one use versus another.

Use of public comment is not merely a vote-counting process. The decision-maker must weigh each comment on its own merit against legal, technical, and resource capability constraints.

Comments about the Forest Plan or EIS were treated in the following way: Comments offering technical corrections or pointing out inconsistencies were used to revise the final Forest Plan. Comments resulting from misunderstanding indicate areas where the final Forest Plan or EIS need clarification. We have made these corrections. Another type of comment requested clarification or questioned some part of the analysis. These requests are clarified or answered in the response to comments that follow. Many also required adjustment to the text of the EIS and Forest Plan. The last type of comment was an expression of personal preference, i.e., wildlife should be emphasized over timber or a request to construct less roads. These comments are the most important to the individual commenters and the most difficult to reconcile.

A favorable response is not always possible. A suggested change may be beyond Forest Service jurisdiction or legal bounds. For example, the Forest Service cannot establish or remove wilderness designations, as some commenters recommended -- only the U.S. Congress can take such action.

A suggested change may be beyond the scope of the Forest Plan. Specific road closures, for example, are too detailed for discussion in the Forest Plan. The Forest Plan's purpose is to determine which resources or uses will be emphasized in each part of the Forest and provide standards and guidelines for how these uses will be achieved. Comments have been retained so the District Ranger or Forest Supervisor may use these detailed suggestions when planning specific programs or projects.

Finally, any suggested change must be considered in light of other comments on the same subject.

B. ANALYSIS OF RESPONDENTS

During the comment period from January 11 to April 29, 1985, 337 individual written communications, including petitions, were received at the Supervisor's Office. All letters and other forms of correspondence were given an identification number upon receipt. This identification number simplifies tracking of comments to problem statement groupings and response. An additional eight written communications were received after the close of the comment period through May 15, 1985

All letters and petitions, including the late ones, were read and substantive comments were identified and grouped by subject matter. Many of the comments related to one or more of the management problems identified in the draft Plan, i.e., providing developed and dispersed recreation opportunities, timber management, wildlife habitat, private oil and gas development, and wilderness. We have grouped and addressed each of these within the appropriate management problem, beginning on page 25. Other comments pertained to changes in alternatives, water quality, air quality, acid rain, and roads. These comments and others not relating directly to the six management problems, are grouped in the "other comments" section beginning on page C-75.

Many comments printed in this appendix are verbatim extractions from letters, while others are paraphrased statements of similar comments or concerns received from several people.

TABLE C-1 FORM AND NUMBER OF REPLIES RECEIVED

Form of Reply	No. of Replies	No. of Signatures	Percent
Personal letters	336	350	97
Petitions	9	1,198	3

Approximately 1,100 copies of the Proposed Plan and DEIS were distributed.

C. PUBLIC COMMENT SUMMARY AND FOREST RESPONSES

In this section, all agencies, organizations, and individuals who responded to the DEIS and/or Plan are listed in alphabetical order. An identification number (I.D. No.) precedes each name. Following each name by code number are the management problems commented on and the number of each comment. If numbers are not shown after an individual's name, their comment did not require a response in this document. These comments were acknowledged by letter from the Forest Supervisor.

INDEX TO COMMENTS ON THE DRAFT EIS AND PLAN

To aid in finding the comments and responses, a key and page reference for the Management Problems follows:

Number	Management Problem	Page
1	Providing Developed Recreation	C-24
2	Providing Dispersed Recreation	C-32
3	Timber Management	C-40
4	Wildlife Habitat	C-56
5	Private Oil and Gas Development	C-67
6	Wilderness	C-71
0	Other Comments	C-75

An asterisk (*) in the management problem column of the index indicates the response is reproduced in full in Section D of this appendix.

ALPHABETICAL LIST OF RESPONDENTS

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
198	Abplanalp, Tim	1	5
		2	4
		5	6
187	Ackley, Sue		
046	Adams, Richard T.	2	12
200	Alexis, Tom	1	8,24
300	Allegheny Forestry, Inc.	3	13,27,28
		0	31
165	Allegheny Outdoor Club	1	5
		2	19
		3	17,22
		4	20
		0	27
091	Allegheny Society of American Foresters	1	11
		3	13,25
			26,28
		0	11

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
181	American Motorcyclist Assn.	2	3
060	Ames, S. A.	2	9,25,26
		3	2,47
		0	27
134	Anderson, Dale	2	20
		3	13,25,49
		4	1,22
		0	28
186	Anderson, Jill	1	13
		2	5
232	Anderson, Joseph	3	4
		0	31
130	Anderson, Mike A.	1	23
		3	2,12
		5	5
126	Angelo, Dwayne	1	23,26
		2	19
		3	17
		4	15
178	Appalachian Mountain Club	2	9
		3	33
		0	3,27,33
325	Armstrong, Malcolm M.	2	22
		3	6,29,45,48
		4	1
030	Aron, Jean	1	5
		2	5
		3	12
		6	2,7
196	Asp, Thomas Richard	4	5
070	Audubon Society of Western PA	2	15
		3	22,23
215	Baum, Amy	1	7
035	Beaver County Cons. League	4	13,16
277	Beavers, Lindsey	1	4
023	Belzer, William R., Ph.D.	3	12
		0	25
048	Benim, Robert C.	2	19
		3	2
		0	31
238	Bennett, Steve	3	4
208	Bentz, Steve	2	7
		0	5
171	Bobeau, Warren L.	1	5,14,23
		3	5,38

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
195	Botma, Jill A.	1	5
244	Brown, Eugene	1	17,22
267	Bundy, Jackie	2	5
075	Burke-Parsons-Bowlby Corp	3	5,13
316	Burton, James R. & Karen A.	1	2,18
231	Burton, Steve	1	13
006	Byerly, Lewis E.	1	5,7
156	Byerly, Lewis E.	1	9
		0	27
248	Carlson, Bob		
098	Candito, Tom	5	5,6,7
		0	27
183	Cartwright, Lisa	2	1
		3	2
001	Clements, Frank L.		
125	Clifford, Scott	1	13
		3	2,9
		4	23
		5	6
094	Colluci, Steve	1	14
		2	6,19
		4	16
161	Cooperative Extension Service	3	2,13,29,38
		4	21
260	Crate, Stacey		
062	Danielson, Timothy W.	1	17
105	Dawes, Edward L.	3	51
		0	31
203	DeChano, Becky	1	17
204	Detch, David	1	17
		0	30
251	Detsch, Christy	1	17
029	Dietrich, Albert C.	4	4
309	Drake, Richard M.	3	23,27
025	Drake, William E.	2	22
		4	7,13,20,25
019	Durante, Randall K.	1	5,24
		4	16
		5	6
		6	2
		0	3,16,27,30

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
009	Elk County Federation of Sportsmen's Clubs	4	20
010	Elk County Cons. District.		
162	Elk County Planning Comm.	*	*
326	Ellsworth, Perry A.	3	5,25
271	Erdman, Jane	0	5
299	Evans, Daniel J.	3	5,10,13,
		3	25,29
169	Fitzpatrick & Weller, Inc.	3	44
		6	9
		0	5,8
311	Fontaine, Roy	1	17
		3	16,21,23
		0	3
090	Foreman, Kim	1	25
		2	19
		3	2
		5	6
		0	27
345	Forest County Planning Comm.	*	*
194	Fox, Michelle	4	20
		0	5
328	Frank, Roy T.	5	7
003	Frayer, Hume C.	4	1
113	Fulton Brothers Lumber	1	27
		3	5,13,20,
		3	25,31,38,39
		6	9
		0	10,28
065	GAI Consultants, Inc.	1	17
		5	1,10
		0	9
237	Galvin, Dave	1	24
		3	4
228	Geer, E. Joseph	1	13
		2	7
283	George A. Spilka Wood Products		
190	Gezik, William J.	1	5
		0	5,30
041	Gibbon, Donald L.	1	7,17
		2	9,12,15
		3	21,23
229	Gibson, Scott	1	5
		2	6
068	Gidos, John P.	3	25,46
		4	26
		0	30

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
207	Gilmore, Rich	2	7
252	Ginkel, Melissa	0	5
020	Graham, Bill	1	17
087	Grasso, Lisa	1	23,25
		2	19
		3	1,17
		4	4,19
		5	9
118	Green, Laurie	1	4,20,25
		2	19
		3	12,22
		5	5,7
		0	30
100	Green, Norman	1	19,23,26
		2	1,12,19
		3	38
		4	16
		0	27
033	Grisez, Ted J.	1	4,15
		2	10,11,15
		2	19,21
		3	11,38
		4	9,10,26,28
		6	7,14
		0	27
275	Guffy, James K.	2	6
		3	2
145	Guidos, Patty	1	25
		2	5,19
		5	6
043	Gwinn, J. T.	1	4
		2	1
		3	2
		5	6
		0	3,27,33
276	Habuberger, Anne	1	5
249	Haight, Kevin	2	1
104	Halligan, Stacy	1	1,16
		3	16
		5	6

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
042	Hammermill Paper Company (D. L. Anderson)	3	15,35
051	Hammermill Paper Company (R. G. Wallace)	1	1
		3	5,13
			25,35,41
		6	8
069	Hammermill Paper Company (D. E. Wills)	3	13,15,17,38
112	Hammermill Paper Company (David A. Sholtis)	3	25,51
137	Hammermill Paper Company (Ron Brenneman)	3	13
		4	9
147	Hammermill Paper Company (John Levavasseur)	3	10,51
166	Hammermill Paper Company (Dennis M. Edmiston)	3	50
167	Hammermill Paper Company (Robert J. LaBar)	2	24
		3	25,50,51
		6	10
		0	11,22,31
284	Hammermill Paper Company (Jeffrey Kochel)	3	5,13,15,17
		0	10,31
230	Harlan, Leroy	3	2
		0	27
168	Harrison, John	2	2,12
		3	3
		5	6
163	Hart, Scott H.	1	6
		2	19
		3	10,22
		0	18,33
279	Hearst, Robert	1	17
		2	4
144	Henry, Joan M.	1	18,20,28
		3	2
		4	20
		5	6
		0	30
131	Heverly, Tim	1	4
		2	6
		3	2,12
		5	6

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
289	Hiegel, Thomas W., Jr.	1	17
		2	16,18
		3	21,23,43
		4	1
		5	5
		6	2,5
		0	29
085	Higby, Paul N.	3	5,13,25,39
		0	6
097	Highhouse, William L.	1	13
		3	2
		4	9
265	High School Student	1	5
		0	30
315	Hillebrand, Jim (Forester)	3	25
285	Hishman, Paul F.	2	9,12
		3	22
261	Holt, Sue	1	4
242	Holt, Tom	1	13
017	Hovanec, Paul A.	1	5,25
		3	52
		6	8
		0	27
197	Howard, Bob	2	7
132	Huber, Douglas	1	25,28,30
		2	22
		3	2,13
		4	4,19,21
		0	30
273	Hulings, Sam		
170	Hunley, Jimmy L.	3	28,51
218	Hunt, Dave	1	13
		0	30
080	Hyma Devore Lumber Mill, Inc.	1	24
		2	28
		3	5,13,
		3	25,38,39
036	James, Robert V.	1	13
		2	5,12
		3	1,13
		4	4,16
		0	33
079	James E. Wilhelm Memorial Chapter (12 signatures)	1	24
		4	20
		0	30

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
331	James E. Wilhelm Memorial	1	5
	Chapter (Thomas J. Hanson)	2	5
		4	20
		5	5
		0	30
217	Jefferds, Steve	1	13
		0	30
269	Johnson, Julie	1	17
210	Johnson, Robert		
189	Johnson, Sarri		
205	Johnson, Tamberlane	1	17
243	Johnston, Jim	1	17
		2	21
		0	30
256	Jones, Steve	2	6
		4	16
214	Kaller, Doug	3	4
184	Kane, Alicia	1	17
032	Kane Fish and Game Club	1	4,5
		2	5,12
		3	1
		4	27
061	Kane Handle	3	25,38
226	Kealber, Betsy	1	13
		2	6
		0	27
045	Kenny, R. B.	1	17
		3	2,3
		0	30
149	Kershner, Bruce	2	15
		3	4
		4	2
124	Kilner, Karolyn	1	4
		2	19
		3	9,16
		4	20
		5	6
		0	27
295	Kinzua Dam Vacation Bureau	1	18
241	Knapp, Bob	1	17,18,19
272	Kotnick, Stephanie	1	4,5
151	Kreutzer, Kristin	1	24
		2	16
		3	9,21
291	Krupa, Dennis W.	3	2
		0	19,27

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
047	Lamison, Chris	1	7,24
		2	5
		3	10
		4	1
302	Larimer & Norton, Inc.	3	25,26
329	Lawrence, William III	2	15
		3	22
282	League of Women Voters of PA	1	17
		2	15
		3	22
078	League of Women Voters of Warren County	1	17
		2	15
		3	22
081	Leslie, Cheryl	1	1,16
		2	12,23
		5	9
		6	5
312	Leslie, R. E.	3	13,25
206	Lindsey, Bryce	1	26
037	Liska, Betty	1	14
		3	10,30
		5	1
		6	2
		0	27
002	Lockhart, Beverly	4	15,16
		6	1
		0	2
007	Lord, Homer V.	0	27
110	Lynch, Lisa	1	1,16
		2	5
		3	12,16
		5	5
058	Mallery Lumber Corp	3	5
		0	10
258	Maris, Ely	1	5
		2	7
153	Martin, Anita	1	25
		3	13,17
		4	16,19,22
		5	1,6
		0	27
093	Martin, Jennifer	1	25
		2	12
		3	2,22
		5	5

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
143	Mayer, Michelle	1	25
		2	12
		3	21
		5	5
253	McDivitt, Lisa	2	6
201	McDowell, Candi	1	17
		0	5
188	McDowell, Kathy	1	24
		4	20
139	McKean County Planning Comm. (Deborah L. Lunden)	3	13,38
140	McKean County Planning Comm. (Terry L. Hess)	1	1
		3	1
		4	16
015	McKown, John	1	5,9,24
		2	9,21
		3	30
		5	1,6
		0	15,27
016	McKinney, Patrick	1	1,14,21
		2	6,16
		3	2,16,18,22
		4	15,16,20
		5	1
		6	2
		0	27
255	Meckley, David	1	1,21
038	Mercer County Federation of Sportsmen's Clubs	1	1
		4	13,16
103	Millholen, David	3	13,19,38,51
		0	31
024	Mishic, Tim	3	1
		4	20
225	Mishler, Michael C.	1	17
083	Mitchell, Tom	2	19
		3	16
		4	18,20
		5	6
		0	30
071	Montecalvo, Natalie	3	16,18
		6	3,4
115	Montgomery, Jennifer	2	19
		3	16
		4	8,16
		5	8
250	Moore, Kathy	1	17
		0	5,30

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
264	Moore, Rachelle	1	13
		3	2
216	Morehead, Jeff	0	30
246	Morgan, Cheri	1	17
106	Morgan, Robert E.	2	9,12,27
		6	2
		0	18
278	Mosier, James	1	17
152	Mubel, Stan	1	4,29
		2	2
		3	2
		4	23
		5	5
		0	27
202	Muisiner, Matt	1	24
		2	19
322	Munsee, Lloyd L.	2	20,28
148	National Audubon Society	1	17
		2	15,17
		3	9,21
		4	9,26
		0	30
330	Natural Resources Defense Council, Inc.	3	9,14,21,
		3	23,34,37,38
		5	10,12
		0	1,3,12,29
174	Neel, Charles A.	1	4
173	Neel, Marjorie Taylor	1	5
053	Neely, Lee, Jr.	1	5,6,25
		0	27,30
335	*Neller, Richard K.	1	5
		2	9,26
		3	22,23
338	NYS Ofc of Parks, Recreation and Historic Preservation	4	10,13,24
		5	13
		0	18
076	NC PA Regional Planning and Development Commission	3	13,25,38
028	NW Division, PA Federation of Sportsmen's Clubs	4	13,16,27
213	Oakis, Wendy	1	17
		2	5
		3	4
		0	30

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
222	O'Hara, Dan		
111	O'Leary, Dan	3	1
292	Onoville Sailing Club	1	17
262	O'Rourke, Stephanie	1	24
072	Ostergard, Douglas B.	3	13,38
		0	31
120	Paiano, Angie	1	23,26
		2	6,19
		3	2
		4	20
		5	5
191	Palmer, Todd	1	17
		3	16
		5	6
182	Patterson Lumber Company		
324	Pelkofer, Mrs. Patricia	1	5,10,11 17,19,24
		2	15
		3	2
		6	12
		0	18,30
290	PA B.A.S.S. Chapter Federation, Inc.	4	16
		0	3,17
031	PA DER Bureau of Soil and Water Conservation	*	*
034	PA DER Secretary's Office of Policy	2	8
		3	26
		4	13
		5	5
333	Pennsylvania Department of Transportation	0	32
050P	Federation of Sportsmen's Clubs	1	24
		4	13,16
158	Pennsylvania Fish Commission	1	12
		4	24
336	*Pennsylvania Game Commission (John P. Dzemyan)	1	5,18
		2	5
		3	38
		4	1
341	*Pennsylvania Game Commission (Peter S. Duncan)	1	3
298	Penntech Papers, Inc.	3	13,25,38
		4	7
209	Perry, Jodi	1	6
		2	4

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
219	Peterson, Amy L.	0	5
141	Peterson, Pat Wescott	2	19
		3	11
		0	27
127	Phillips, Karen	1	1,14,16,
		1	23,26
		3	12,16
		4	9
096	Phillips, Tom	1	25
		4	9
		5	6
		0	27
220	Pierotti, Douglas	3	16
308	Plateau Hardwoods, Inc.	3	5,13,25,
		3	38,39
235	Poklar,Tom	1	17
254	Postlewaite, Andy	4	20
		0	30
109	Puller, Blaine A.	3	13,24,25
223	Pyle, Scott	1	17
		0	30
116	Quinn, Stacy	1	26
		2	19
		3	2
233	Rapp, Julie	3	2
119	Reaghard, Scott W.	1	26
		2	1,19
		3	2
		5	1
		0	31
259	Reigel, Julie	1	26
		3	2
297	Reist, Richard H.		
014	Rice, John D.	6	2
327	Rick, Rob	1	1,14,16,23
		2	12
		4	20
		5	5
049	Robinson, Everett	2	6
		3	16
		4	21
		0	30
224	Rockwell, Ryan	1	13
268	Rolick, Steve	1	13

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
263	Rook, Dan	1	4,5
		3	4
040	Root, Ian	1	13,24
		2	12
		3	36
		5	7
		0	14
052	Roe, Eunice M.	2	21,26
		0	30
150	Romanelli, Rick	1	24
		2	7,21
		5	9
192	Romanick, Patty	1	8
		4	20
281	Ryding, Jack A.	1	13
		0	27
247	Schlercher, Jim	1	13
142	Schluep, Beth	2	19
		4	9,16
212	Schrecengost, Gary		
011	Seth, Walter	1	5
		4	7
		0	30
164	Shreve, E. Wilson	1	25
		2	12
280	Shuam, Thos	1	17
		4	16,20
054	Sierra Club (David Unger)	1	5,10,17
		2	15
		3	22,23
		4	26
175	Sierra Club, Atlantic Chapter, NY	2	15
		3	16,22,23,40
		4	6,24
067	Sierra Club, Headwaters Group, PA	1	17
		2	15
		3	23
294	Sierra Club, Lake Erie Group, PA	1	4,10
		2	14,15,16,17
		3	23
		6	5,8,11,12
		0	25

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
159	Sierra Club, Moshannan Group, PA	1	17
		5	5
		6	13
		0	12
073	Sierra Club, Niagara Group	2	15
		3	23
055	Sierra Club, Otzinachson Group	1	6
		2	5
		3	10,23
		4	12
		5	3,5,12
		6	2
		0	23,25,26,27
180	Sierra Club, PA Chapter	2	9,13,16,19
		3	4,22
		4	9
		0	3,11,12,27
122	Sikora, Nancy	1	13,20,24 25,28
		2	9
		3	1,12,16
		4	9
		5	5
154	Simon, David L.	1	24
		2	19
		3	2
		5	5
		0	18
239	Slewinski, Christy	1	24
		0	30
185	Snyder, Carrie		
234	Snyder, Pam	1	24
		3	2
		4	20
		0	30
274	Softich, Amy	2	2
057	Soil Conservation Service	*	*
133	Southern Tier Natural Resources (NY)	2	24,28
		3	6,7,15, 25,28
		4	4,11,14,29
		0	10
064	Statler, James W.	1	8
		2	15,16
		3	22,23

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
323	Stec, Tony L., President	3	25,38
092	Steindorf, Ellen C.	1	5,17,25,28
		2	9,12
		3	3
		4	9
		5	7
301	Stevens, Florence Reed	1	13
321	Street, John C. (Chair, ANF Plan)	2	5,19
		3	9
		4	20
		6	2
		0	27
318	Stuckart, Margaret L.	3	25,38
		0	22
123	Sullivan, Tammy	1	18
		2	19
		3	1
		4	27
		5	9
332	Sundheimer, Paul W.	3	21,25,39,42
		4	1,21,29
		6	8
012	Sundquist, Bruce	3	21,23,45
022	Sunseri, Sam	3	2
		4	20
101	Swanson, John R.	5	6
		6	2,7,8
		0	7,30
310	Swanson, Nancy C.	*	*
236	Swartfage, Scott	1	5
121	Szmit, Sandra L.	1	1
		2	12
		3	1
		4	9,22
		5	6
082	Szurszewski, Sally Ann	1	25
		5	6
146	Szymanski, Jackie	1	29
		2	1,19
		3	4
		5	6
		0	27
257	Teel, Aaron Lee	1	13,17
		2	5,9
		0	5

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
334	Texasgulf	3	5,13,25,
		3	39,45
		5	2
		0	5
005	Tisony, Robert D.	1	13,15,16,24
		2	5,15,23
		3	10,13
		4	9
		5	5
		0	3
128	Tucker, Jim	1	13
		0	3
021	U. S. Army Corps of Engineers	5	4
340	USDI Office of the Secretary	3	13,38
		4	9,20,30
		5	1,5,10,
		5	11,12
337	U. S. Environmental Protection Agency	3	53
		0	4,18,19,
		0	20,24,33
227	Verkon, Paul	1	17
245	Victory, Dan	1	13
088	Vitale, Anthony	1	13,23,24
		2	6,21,22
		3	2,12,16
		4	20
221	Vito, Shelly	1	17
		3	2
		4	20
		0	27,30
099	Waite, MSG Jerry P.	2	26
		4	15,17
		5	1
		6	2,5
		0	3,25,26
193	Wall, Wendi	1	6
		2	6,19
108	Warren County Chamber of Commerce	1	1
		3	19
107	Warren County Commissioners	*	*
013	Warren County Council of Sportsmen	1	1
		4	13,16

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
089	West, James	1	5
		2	19
		4	9
		0	27
179	Western Pennsylvania Conservancy	2	16,25,26
129	Westvaco	3	32
270	Whiteman, Troy	1	17
307	Wildlife Management Institute	2	2
		3	34,38
		4	26
		6	14
		0	13
320	Williams, J. C. III	4	21
026	Willis, Ed	4	13
266	Wolfe, JoDee	1	4
059	Wood, John P.	1	4,25
		2	5
		3	2
		4	3,7
		0	18
138	Woodruff,	3	5,8
		4	1
211	Yasusek, Lisa	3	16
		0	27
319	Zaunick, Emil	3	2,20
		4	1
		5	6
084	Zelazowski, Joan M.	3	1
		4	20
		5	5
		0	3,27
117	Zolkowski, Lisa	1	1,23
		2	6
		3	16
		4	23
		5	5
114	Zottola, Annette	1	26
		2	2,19
		3	2
		5	6

I.D. No.	Respondent's Name	Mngmt. Problem	Comment Number(s)
095	Zottola, Marlene	1	26
		2	1,19
		3	2
		5	1
		0	31
199	Zuzek, Paul		
PETITIONS			
066	16 Signatures	1	4,17
102	870 Signatures	1	5,17
135	43 Signatures	3	13,20,27,38
		0	28
172	9 Signatures	1	4
288	76 Signatures	3	13,20,27,38
		0	28
296	118 Signatures	1	4,5,17
313	15 Signatures	3	13,20,27,38
		0	28
344	36 Signatures	1	5,13
044	15 Signatures	2	29

RESPONSE TO PUBLIC COMMENT

Management Problem 1 - Providing Developed Recreation

Allegheny Reservoir Resorts and Large Campgrounds

1. Supports development of rustic resorts at specified locations on the Allegheny Reservoir.

Respondents - 013, 016, 038, 051, 081, 104, 108, 110, 117, 121, 127, 140, 255, 275, 295, 327

Forest Service Response - The alternatives were designed to provide a range of development options. This type of recreation facility is a legitimate use of National Forest land, serving those who are interested in a more rural recreation experience. In response to public comment on Alternative D, we have removed the proposed resort at Sugar Bay. Instead we plan to develop a motel and restaurant complex adjacent to Kinzua Beach and the Allegheny Reservoir Marina. A site specific analysis will evaluate specific environmental concerns prior to any construction work. The section covering developed recreation in Chapter 3 of the Forest Plan has been revised and provides more detail on the type of expansion proposed.

2. Specifically supports private development of Kiasutha and Chappel Bay Areas.

Respondents - 316

Forest Service Response - Although Kiasutha was considered for private development in Alternative C, the Kinzua arm is already highly developed. So most of the new development planned is on or near the main body of the reservoir.

3. Opposes any new recreation development on the reservoir because of the adverse affect these facilities will have on future bald eagle nesting attempts. Such affects include increased human activity around the reservoir and destruction of suitable nesting sites.

Respondents - 341

Forest Service Response - We are also concerned about the adverse effects of development on the bald eagle. We have strengthened the 2600 section of the Standards and Guidelines for Threatened and Endangered Species in the Forest Plan. These will mitigate any potential adverse effects on the bald eagle. The Allegheny National Forest has an objective to host an active pair of bald eagles by the year 2000.

The U. S. Fish and Wildlife Service has reviewed the DEIS and Forest Plan, and they feel the proposed actions will not jeopardize the bald eagle. A copy of their letter is included in this Appendix in the section which shows the response from government agencies.

4. Opposes the idea of any new building construction and other commercialization of the reservoir area.

Respondents - 032, 033, 043, 059, 066, 118, 124, 131, 152, 172, 174, 261, 263, 266, 272, 277, 294, 296

Forest Service Response - See the response to comment 1.

5. Opposes resort development because it will displace existing wildlife, reduce dispersed recreation opportunities, and destroy many of the reservoir's unique features and scenic beauty.

Respondents - 006, 011, 015, 017, 019, 030, 032, 053, 054, 079, 089, 092, 102, 165, 171, 173, 190, 195, 198, 229, 236, 258, 263, 265, 272, 276, 296, 324, 335, 336, 344

Forest Service Response - See response to comment 1. In Alternative D, the effects on wildlife and dispersed recreation will be localized and relatively insignificant overall. The impacts on the Reservoir's unique features and scenic beauty are protected by Forest Plan Standards and Guidelines and will also be insignificant.

6. Opposes resort development because it will lead to increased litter and pollution, reduce water quality, and necessitate the cutting of a large number of trees.

Respondents - 053, 055, 163, 193, 209

Forest Service Response - See response to comment 1. The effects on timber in Alternative D will be confined to the immediate area developed and will be relatively insignificant overall. The impacts on litter, pollution, and general water quality can be mitigated by Forest Plan Standards and Guidelines.

7. Opposes resort development because it will destroy feelings of solitude and quiet.

Respondents - 006, 041, 047, 215

Forest Service Response - See response to comment 1. In addition, the Final EIS recognizes in Chapter 4 that there will be some significant and unmitigated affects on the noise levels and feelings of solitude in the immediate area surrounding the resorts.

8. Opposes resort development because it runs counter to the principles of protecting a National Forest.

Respondents - 064, 192, 200

Forest Service Response - See response to comment 1. Though resorts do mean development and a change in the area where they are located, they are consistent with the multiple use concept.

9. Opposes resort development because it will increase taxes.

Respondents - 015, 156

Forest Service Response - Since the resorts will be developed and operated with private funds, they should not affect regional taxes. Resort development should have the opposite effect on local taxes, for we believe federal payments to county government will increase, thus providing the county government with the opportunity to lower individual tax rates without affecting total operating funds.

10. Opposes the general concept of private resorts because it will allocate too much of a scarce resource (reservoir) to a wealthy few.

Respondents - 054, 294, 324

Forest Service Response - The resorts proposed will be privately financed, but they will be available for all people to use, regardless of their income (just like ski areas which are located on public land). The preferred alternative calls for very little of this type of development.

11. Opposes private resort development since it will reduce public access to the reservoir.

Respondent - 091, 324

Forest Service Response - See the response to comment 10. The resorts will actually increase public access to the reservoir area.

12. Specifically opposed to development of Sugar Bay Resort because of the conflict with new NRA legislation.

Respondent - 158

Forest Service Response - Sugar Bay Resort is not in the NRA. Since the environmental effects of the proposed resorts are localized, we believe there would be no conflict. However, we have deleted the Sugar Bay Resort from the preferred alternative.

13. Opposed to any hotels, motels, cottages, or resorts along the reservoir.

Respondents - 005, 036, 040, 088, 097, 122, 125, 128, 186, 217, 218, 224, 226, 228, 231, 242, 245, 247, 257, 264, 268, 281, 301, 344

Forest Service Response - Same as comment 1.

14. Supports the concept of more and/or larger campgrounds in the reservoir area.

Respondents - 016, 037, 081, 094, 104, 110, 127, 140, 171, 327

Forest Service Response - We concur. We have retained the campground expansion in Alternative D.

15. Desires additional bank fishing areas along the reservoir.

Respondents - 005, 033

Forest Service Response - We concur. The preferred alternative has 2 3/4 miles of additional bank fishing trails planned at four different sites. See Table C-8 of the Forest Plan.

Resorts and Large Campgrounds Along Rivers

16. Need to develop campgrounds, boat launches, and other facilities along the Clarion, Tionesta, and Allegheny Rivers.

Respondents - 005, 036, 059, 081, 104, 110, 127, 153, 289, 327

Forest Service Response - The alternatives were designed to present a range of options for developing campgrounds, boat launches, and other facilities along the river corridors. The preferred alternative provides a moderate amount of development along the rivers, a compromise between the various interest groups. (See Appendix B-Final EIS, Table B-56).

Public/Private Investment in Developed Recreation Facilities

17. Against private financing of developed recreation areas on National Forest land - no reason given.

Respondents - 020, 045, 065, 066, 092, 100, 102, 148, 159, 191, 203, 213, 221, 225, 227, 241, 243, 244, 250, 251, 257, 270, 279, 280, 289, 292, 311, 041, 054, 062, 067, 078, 184, 201, 204, 205, 213, 223, 235, 246, 269, 278, 282, 296, 324

Forest Service Response - Private financing and operation of highly developed recreation sites is simply another way of funding National Forest facilities. There will be no difference, compared to federal funding, in the quality of the facility or the experience provided. It is a good way to provide another service to the public without significantly increasing the Forest budget.

18. Private financing of developed recreation facilities is okay.

Respondents -123, 144, 241, 295, 316, 336

Forest Service Response - Same as comment 19.

19. Allow some private development but regulate it very strictly.

Respondents - 241

Forest Service Response - We Concur. Special use permits will regulate privately financed development to meet the Management Area 7 and Forest-Wide Standards and Guidelines. See Forest Plan Chapter 4 for details.

Other Comments Relating to Developed Recreation

20. Supports improvements of existing campgrounds before constructing any new ones.

Respondents - 118, 122, 144

Forest Service Response - Our assessment of recreation site demand helped determine the timing of the new facility construction and the existing facility expansion. In some cases we felt that public interest and the need to provide recreation opportunities at other locations indicated the Forest needed a new area before improving an existing area. See Appendix B-FEIS, Table B-56, and Forest Plan, Table C-8 for the type and timing of campground expansion and construction.

21. Supports development of interpretive facilities for arts and crafts.

Respondents - 016, 255

Forest Service Response - Normally we don't provide interpretive facilities for arts and crafts unless they are part of our cultural resource. We emphasize interpretation related to natural resource management. See Forest Plan Chapter 4, Standards and Guidelines for MA 7, for a brief discussion about the planned interpretive program.

22. Expressed need for small cabins in the woods.

Respondents - 244

Forest Service Response - Since the Kinzua Beach/Marina site is not physically well suited for cabins, they will not be provided or constructed in the preferred alternative. Cabins are included as developments associated with the resorts proposed at Hodge Run in Alternative E, and at Kiasutha in Alternative C since these sites are well suited. Cabins are expensive to maintain and provide an experience level most compatible with the rustic resorts, so we only considered building them in conjunction with the resorts.

23. Supports an increase in boat launch facilities, including some for larger boats. These developments need not be connected with campground facilities.

Respondents - 087, 088, 100, 117, 120, 126, 127, 130, 171, 327

Forest Service Response - We concur. The preferred alternative contains new boat launches, especially along the river corridors. These facilities are designed to accommodate moderate sized boats and are needed to meet

demands. Larger boats may be launched at the Allegheny Reservoir Marina. See the Forest Plan, Table C-8 for further details.

24. Generally opposed to any new developed recreation facilities on the Allegheny National Forest.

Respondents - 005, 015, 019, 040, 047, 050, 079, 080, 088, 122, 150, 151, 154, 188, 200, 202, 234, 237, 239, 262, 324

Forest Service Response - Developed recreation is a legitimate use of National Forest Land. Developed sites serve those campers who prefer a few more conveniences and a more structured setting than dispersed recreation provides. Demand analysis indicates a need for some increase in developed recreation facilities (see the discussion on demand in section IV.B of Appendix B of the EIS). Alternative D provides only a modest amount of new development, with a limited amount in Decade 1. In response to public comment, we have deleted the resort at Sugar Bay from Alternative D, but we plan to develop a motel and restaurant complex near the Allegheny Reservoir Marina. For more information, see the Final EIS, Chapter 4, Section C, the discussion about Management Problem 1 and see the Forest Plan, Table C-8.

25. Opposed to any new campground developments on the Allegheny National Forest.

Respondents - 017, 053, 059, 082, 087, 090, 092, 093, 096, 118, 122, 132, 143, 145, 153, 164

Forest Service Response - Same as comment 24.

26. Supports development of a few new campgrounds, widely scattered, and which offer few modern conveniences.

Respondents - 095, 100, 114, 116, 119, 120, 126, 127, 206, 259

Forest Service Response - The preferred alternative and some of the other alternatives provide this type of facility. For more information, see the Forest Plan, Table C-8, and the Final EIS, Section C, the discussion for Management Problem 1.

27. Supports a small increase of developed recreation near major waterways.

Respondents - 113

Forest Service Response - Alternative D, the preferred alternative, is designed to provide a moderate amount of new facilities for waterway recreation. For more information, see the Forest Plan, Table C-8.

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28. Opposes development of new boat launches. Reasons stated include low use at existing facilities and already congested rivers and lakes.

Respondents - 092, 122, 132, 144

Forest Service Response - See comments 23 and 24. Our existing boat launches are busy, and use is increasing. In addition, our demand analysis as discussed in Appendix B-FEIS, Chapter IV, Section B, indicates a need for additional access to major water bodies located on the Forest. Water resources can accommodate additional use without exceeding the experience levels of associated ROS classes.

29. Supports closing some existing campground facilities.

Respondents - 146, 152

Forest Service Response - Some campgrounds may be closed if use or receipts are so low that continued operation is not reasonable.

30. Supports continued maintenance of existing Scenic Drive.

Respondents - 132

Forest Service Response - We concur. The alternatives provide for this.

RESPONSE TO PUBLIC COMMENT

Management Problem 2 - Providing Dispersed Recreation

Off-Road Vehicle (ORV) Trails

1. Eliminate all ORV trails.

   Respondents - 043, 095, 100, 119, 146, 183, 249

   Forest Service Response - Off-road vehicle recreation is a legitimate use of National Forest land, and there is a demand for this kind of use on the Allegheny National Forest. ORV's are compatible with the other uses which will occur within the management area where ORV trails are located. Other management areas emphasize non-motorized recreation, such as Management Areas 5,, 6.2, and 6.4. There are also many areas within Management Areas 3 and 6.1 which will not have ORV use but will have trails for non-motorized use. We recognize the DEIS did not provide a wide range of ORV development between alternatives. We have revised the amount of planned ORV trail construction in the different alternatives as follows: Alt A = 0% of 1977 EIS, Alt B = 100%, Alt C = 75%, Alt D = 100%, and Alt E = 125%. The preferred alternative still contains 100% of the amount of trails provided in the 1977 ORV EIS, an amount sufficient to meet demand for them.

2. Provide less ORV trails than proposed.

   Respondents - 114, 152, 168, 274, 307

   Forest Service Response - Same as comment 1.

3. Need to clarify ORV policy and identify where and when to locate trails.

   Respondents - 181

   Forest Service Response - Same as comment 1. The final EIS lists the new ORV trail construction by decade. The policy for ORV management has been taken from the 1977 ORV EIS and placed in the 2300 section of the Standards and Guidelines in Chapter 4 of the Forest Plan.

4. Provide trails and opportunity for ORV as proposed.

   Respondents - 198, 209, 279

Forest Service Response - We concur. Your proposal is contained in the preferred alternative.

5. No more ORV trails than currently exists.

Respondents - 005, 030, 032, 036, 047, 055, 059, 110, 145, 186, 213, 257, 267, 321, 331, 336

Forest Service Response - Same as comment 1.

6. Provide some increase in ORV trails above existing.

Respondents - 016, 049, 088, 094, 117, 120, 131, 193, 226, 229, 253, 256, 275

Forest Service Response - Same as comment 1.

7. Provide more opportunity than proposed for ORV trails.

Respondents - 150, 197, 207, 208, 228, 258

Forest Service Response - Same as comment 1.

8. No ORV trails in Management Area 6.1.

Respondents - 034

Forest Service Response - The 2300 section of the Forest-wide Standards and Guidelines describes the specific locations of the ORV trails on the Forest. Management Area 6.1 provides a semi-primitive motorized setting. Though we feel ORV trails are fully compatible with this objective, many specific locations of Management Area 6.1 will not have any ORV trails. For example, we do not plan to develop any ORV trails in either the Minister Valley or Clarion River undeveloped areas. (For a description of the locations of these areas, see page 4-115 of the Forest Plan). As in all other management areas, ORV use will be limited to the trail locations to limit impacts to other resources and recreation users.

Non-motorized and/or Solitude Opportunities

9. Set aside more semi-primitive non-motorized (SPNM) areas than proposed in Alternative D.

Respondents - 015, 041, 060, 092, 106, 122, 178, 180, 285, 335

Forest Service Response - We have modified the preferred alternative (Alt D) to increase the number of SPNM Acres. The allocation to Management Area 6.2 has been increased by 15,000 acres (See Figure 2-5 and Table 2-10 in the EIS).

10. Keep Management Area 6.2 with SPNM recreation in the preferred alternative.

Respondents - 033

Forest Service Response - We concur. Management Area 6.2 is in the perferred alternative and the acreage has been increased to a total of 20,000 acres.

11. Keep motorized use out of Management Area 6.1, except on open roads.

Respondents - 033

Forest Service Response - The recreation objective for this management area is semi-primitive motorized, and we feel that designating ORV trails at certain locations is compatable with this objective. As in all other management areas, ORV use will be limited to the trail locations to reduce impacts on other resources and other recreation users. However, we have modified the Forest Plan Standards and Guidelines for Management Area 6.1 to exclude ORV use in the Clarion River and Minister Valley Areas.

12. Prefers quiet, solitude, and undisturbed areas with no motors but foot travel only.

Respondents - 032, 036, 040, 041, 046, 081, 092, 093, 100, 106, 121, 143, 164, 168, 285, 327

Forest Service Response - This comment supports more SPNM recreation opportunities in the preferred alternative. See response to comment 9.

13. Include a range of recreation opportunities in Wilderness and SPNM areas. Develop more "appropriate" values to reflect the economic value of such use.

Respondents - 180

Forest Service Response - Management Areas 6.2 and 5 do feature a range of opportunities compatible with a SPNM recreation experience (such as backpacking, primitive camping, hiking, and cross-country skiing). For more information, see the description and the Standards and Guidelines for each area in Chapter 4 of the Final Plan.

Throughout the planning process, we utilized the RPA Recreation and Wilderness values developed for the Eastern Region (R-9). We found no basis for adjusting them. For additional information, refer to Tables B-12 and B-13 in Appendix B - Final EIS.

Special Areas

14. The Forest needs more 6.3 management areas. Buzzard Swamp area should be bounded peripherally by Management Area 6.1 to act as a buffer zone.

Respondents - 294

Forest Service Response - Buzzard Swamp is the only riparian area on the forest of sufficient size to be designated as a separate wildlife management area (MA 6.3). Other management areas contain suitable habitat but are not large enough. They will be managed as wildlife inclusions using the Standards and Guidelines in the 2600 section for that Management Area.

Concerning the peripheral areas around Buzzard Swamp, there is no need to create a buffer zone of MA 6.1. The activities planned for these management areas will complement rather than detract from the objectives of Buzzard Swamp. Timber management activities will promote both age class and species diversity (vegetation), existing wetlands will be managed as stand inclusions, wildlife habitat projects will be scheduled as opportunities arise, etc. For further details, consult the Forest Plan Standards and Guidelines (2600) for each Management Area.

15. Designate Minister Valley and Clarion River Valley as Special Areas.

Respondents - 005, 033, 041, 054, 064, 067, 070, 073 078, 148, 149, 175, 282, 294, 324, 329

Forest Service Response - Management Area 6.1 Standards and Guidelines do provide the necessary management direction to protect the unique values found in these areas. In addition, we have modified the Standards and Guidelines to exclude ORV use within both the Clarion River and Minister Valley areas.

16. Need more Special Areas. Specific candidates include:

Bear Creek Valley (289,294)
Crull and Thompson Islands (179)
Rimrock - Morrison Trail (294)
Kinzua Creek (016)

Respondents - 016, 064, 151, 179, 180, 289, 294

Forest Service Response - Crull and Thompson Islands are already designated as Wilderness areas. The other three geographic areas are assigned to both Management Areas 6.1 and 3 (Refer to the Forest Plan maps). Standards and guidelines for Management Areas 6.1 and 3 will adequately protect their unique qualities.

17. Designate the Allegheny and Clarion Rivers as National Wild or Scenic Rivers and manage as Special Areas.

Respondents - 148, 294

Forest Service Response - Only Congress can designate Wild and Scenic Rivers. The Clarion River was evaluated for such designation in 1974 but found ineligible due to its poor water quality. It has since been added to the list of Nationwide Rivers and may be resubmitted for review pending correction of its water quality problems. The Allegheny River is currently under study of Wild and Scenic River designation. Existing Forest Plan Standards and Guidelines are designed to protect those values which make each river eligible for such designation. For additional information, consult the Final EIS, Chapter 3, Section B.

Foot Trails

18. Need to improve the quality of the existing hiking trail network.

Respondents - 289

Forest Service Response - We concurr. The additional connector and loop trails included in the preferred alternative will improve the quality of hiking experiences.

19. Need to develop more foot trails than currently exist.

Respondents - 033, 048, 083, 087, 089, 090, 094, 095, 100, 114, 115, 116, 118, 119, 120, 123, 124, 126, 141, 142, 145, 146, 154, 163, 165, 180, 193, 202, 321

Forest Service Response - We agree there is a need for more trails on the Forest. New trails have been specified to accomplish the objectives for each alternative and management area. The response to Comment #22 explains the need for trails on the Forest. For additional information on new trail construction, refer to the Final EIS, Table 4-5 and the Forest Plan, Management Area Standards and Guidelines, 2300 Subheading.

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20. Limit construction of new hiking trails to NRA's or Wilderness areas.

Respondents - 134, 322

Forest Service Response - Same as comment 19.

21. Supports idea of less trails - no more trail construction.

Respondents - 015, 033, 052, 088, 150, 243

Forest Service Response - Same as comment 19.

Other Comments Related to Dispersed Recreation

22. Do not expand dispersed recreation opportunities. We now have Wilderness. I can see no need to develop new trails.

Respondents - 025, 088, 132, 325

Forest Service Response - For many people, dispersed recreation opportunities and trails in areas outside Wilderness and National Recreation Areas offer an appropriate but different recreation experience. There are many features outside of Wilderness and National Recreation Areas which people enjoy. Areas with more vegetation management have a different visual setting, different natural features, a larger variety of wildlife habitat, and therefore, a larger variety of wildlife species. Many people feel dispersed recreation opportunities are too limited and that we need trails at other locations on the Forest. The alternatives presented in the Final EIS include a wide range of dispersed recreation opportunities, with each alternative reflecting a recreation management intensity compatible with that alternative's management philosophy. Consult Chapter 2 and Table C-8 of the Forest Plan and Tables 4-5 and 2-10 of the Final EIS for more information.

23. Trailhead campgrounds not necessary - expand parking areas.

Respondents - 005

Forest Service Response - See comment 22. Experience has shown that trailhead campgrounds are well used and appreciated. We have planned trailhead campgrounds only in areas where they will support planned or existing recreation opportunities.

24. Supports strongly the concept of "roaded natural" areas.

Respondents - 133, 167

Forest Service Response - We also support roaded natural recreation on the Forest. The planning process considered a wide range of acreage for each ROS class. Alternative D contains 330,000 acres of land in the roaded natural class. For details, consult the Final EIS, Chapter 4 - Sections on Problem Statement #2 and Cumulative Effects - Recreation.

25. Plan seems to be out of balance between timber production and recreation development.

Respondents - 060

Forest Service Response - We assume that you are 1) comparing the current situation against the Preferred Alternative and, 2) are making your interpretation of "balance" based upon the alternative objectives and MA allocations described in Chapter 2 of the Final EIS.

Alternative D actually contains more emphasis on both recreation and timber than the current situation (Alternative B). While Table 2-10 of the Final EIS shows a decrease in the acreage allocated to MA 6.1 (an apparent conflict), it does not mention that Alternative D has a higher intensity of recreation management in many areas than Alternative B. Keep in mind that alternative D has several large areas where we emphasize semi-primitive dispersed recreation opportunities. Any timber harvesting which may occur there will be only to accomplish wildlife management objectives. Table 2-1 of the Forest Plan illustrates the effects of different management intensities and different management area acreage assignments on recreation, wildlife, and timber. Note that recreation use, wildlife use, and timber volume harvested are all higher in Alternative D than in Alternative B.

26. Plan undervalues recreation use.

Respondents - 052, 060, 099, 335

Forest Service Response - See comment 28.

27. Keep Forest appearance as it is today.

Respondents - 106

Forest Service Response - You will see only a modest change between the preferred alternative (D) and our current situation as represented in alternative B. We will be accelerating our timber sale program, but you

will see more intensive wildlife and dispersed recreation activities practiced in Management Areas 5, 6.1, 6.2, and 6.4. For additional information, refer to Chapter 4, Cumulative Effects - Visual Resources, in the Final EIS.

28. Respondent believes we cannot accurately evaluate tradeoffs when comparing nonmarket values to market oriented, commodity values. The results are a distorted picture in favor of the recreation industry.

Respondents - 080, 133, 322

Forest Service Response - One of the purposes of the benchmark runs was to analyze the sensitivity and tradeoffs associated with various assumptions. Benchmark 6 maximizes PNV valuing market outputs only and benchmark 9 maximizes PNV valuing nonmarket outputs only. These sensitivity analyses were completed to estimate what effects the valuing of only market or nonmarket commodities have on allocation schedules and to ensure that when alternatives were developed, all resources were represented accurately with respect to the objectives of each alternative.

The values associated with recreation, wildlife, and timber are valued at a comparable point in the production process. Resources were valued before they left the forest. For example, timber was valued as standing timber. The value added by the harvesting, hauling, and manufacturing was excluded. In a similar fashion, nonmarket outputs, such as recreation and wildlife visitor days were valued at a point of use on the forest. License fees and equipment costs were not included.

Though dollar values need to be considered in the analysis, other values were also considered. The selection of the preferred alternative is based on the highest net public benefit of which the asigned values are only a part.

29. No development in Cornplanter Bridge area, Dewdrop Run, Dutchman Run, or Elijah Run.

Respondents - 044

Forest Service Response - See Comment 24, Management Problem 1. The preferred alternative calls for an expansion of the facilities at the Allegheny Reservoir Marina and Dew Drop campground, but neither occurs in the first decade. These improvements are needed to meet recreational demand, and they will have minimal impacts on the undeveloped sections of the Reservoir. We are not planning any development for the other areas mentioned.

RESPONSE TO PUBLIC COMMENT

Management Problem 3 - Timber Management

Timber Harvest Levels

1. *Support harvest levels given in Alternative D.*

   Respondents - 024, 032, 036, 084, 087, 111, 121, 122, 123, 140

   Forest Service Response - The alternatives in the Final EIS provide a range of timber management opportunities. Each alternative represents a little different management philosophy and addresses its own set of resource management objectives. Changes to harvest levels within a given alternative also produce changes in resources other than timber, particularly recreation and wildlife. This includes changes to the visual variety of the landscape, changes in recreation opportunities, and changes in wildlife habitat manipulation.

   The harvest level shown for Alternative D meets the objectives for wildlife, recreation, and timber for that alternative. Higher levels would violate dispersed recreation experience objectives, wildlife habitat objectives, and the nondeclining flow constraint on timber volume from suitable forest land. Lower levels would provide less wildlife habitat manipulation, lower payments to counties, lower timber receipts, and lower volumes to meet the demand for sawtimber.

   Harvest volume levels are basically controlled by the assignment of land to the various management areas. Management Areas 2, 3, and 6.2 are the principal management areas with associated timber outputs. Management Area 6.1 will yield a minor amount of volume associated with wildlife management activities. See comment 25 for more information on the final allocation.

2. Support lower harvest levels than in Alternative D.

   Respondents - 016, 022, 043, 045, 048, 059, 060, 088, 090, 093, 095, 097, 114, 116, 119, 120, 125, 130, 131, 132, 144, 152, 153, 154, 161, 183, 221, 230, 233, 234, 259, 264, 275, 291, 319, 324

   Forest Service Response - Same as response to comment 1.

3. No more timber harvesting.

Respondents - 045, 168, 092

Forest Service Response - Same as response to comment 1.

4. Support harvest at current levels, i.e., below Alternative B.

Respondents - 082, 149, 180, 213, 214, 232, 237, 238, 263

Forest Service Response - Same as response to comment 1.

5. Support higher harvest levels than in Alternative D. Strong view that ANF can sell all the sawtimber it can produce and the local economy benefits from a higher cut volume.

Respondents - 051, 058, 075, 080, 085, 113, 138, 171, 284, 299, 308, 326, 334

Forest Service Response - Same as response to comment 1.

6. Use of non-declining yield constraint is inappropriate and/or unnecessary for ANF.

Respondents - 133, 325

Forest Service Response - The NFMA Rules and Regulations in 36 CFR 219.16 specify that each Forest shall provide a non-declining flow of timber volume but may depart from non-declining flow in order to better attain the overall objectives of multiple-use management. It lists specific instances when a Forest might consider departing from non-declining flow. In our judgement the preferred alternative provides the best base sale schedule to meet multiple-use objectives. For more information, see the discussion concerning departures in Chapter 2, page 22, of the Final EIS.

7. Base non-declining yield calculation on intensively managed, mature stands.

Respondents - 133

Forest Service Response - "Non-declining Yield" is a constraint used by the FORPLAN model to ensure a continuous non-declining flow of timber volume throughout the management period. The results of this constraint are commonly referred to as long-term sustained yield (LTSY). The long-term sustained yield calculation for each alternative does not necessarily

reflect the most intensive management prescriptions. Rather, it reflects the mix of management intensities which most efficiently meets the objectives specified for that particular alternative. Therefore, a prescription which produces higher volume, but with a lower efficiency from a multiple use standpoint, may be excluded from the calculation. This is consistent with NFMA and and provides a better solution, since the costs of producing the volume are also important.

Understory Control

8. Need an alternative with no herbicide use.

Respondents - 059

Forest Service Response - The Final EIS, in order to display a full range of response to this issue, has shown an alternative with no proposed herbicide use. This was done by changing Alternative B, which represents the current situation, to reflect no herbicide use for 15 decades. This seems appropriate since we have only been using herbicides on an experimental basis, not as a standard regeneration activity on the Forest.

9. Generally opposed to the use of glyphosate herbicide for understory control.

Respondents - 124, 125, 148, 151, 321, 330

Forest Service Response - The alternatives provide a range of acres treated with herbicide, with Alternative D calling for a moderate amount in the first few decades. Glyphosate is considered one of the safest herbicides now available. Chapter 4 of the Final EIS and Appendix D of the Forest Plan contain an improved discussion of the effects of herbicide use. For more information, see the discussion for comments 10 through 13 below.

10. Opposed to herbicide use and favor deer management controls, such as fencing, hunting limits, etc., to control unwanted browsing.

Respondents - 005, 037, 047, 055, 147, 163, 299

Forest Service Response - These measures recomended to control unwanted browsing are being employed; however, they will not eliminate the undesirable understory that has developed over a large segment of the forest from past overbrowsing. This undesirable understory is now preventing reforestation efforts from being successful. To date, the use of herbicides to eliminate this undesirable understory has been proven to be the most practical and economical treatment available.

The Forest Plan (Chapter 3) calls for continued research on alternative methods for regenerating Allegheny hardwoods. In addition, research is continuing on the potential long term adverse effects of glyphosate herbicide. New findings will be considered as they occur and the Forest's herbicide program modified, as needed.

11. Opposed to herbicide use because of non-selective destruction of valuable herbs and shrubs.

Respondents - 033, 141

Forest Service Response - Herbicides currently available for Forest Service use are non-selective and will kill any herbs, shrubs, and desirable reproduction along with the undesirable understory. On the other hand, herbs, shrubs, and desirable understory have little chance of surviving and developing when competing with the aggressive fern or striped maple understory that has developed on about half of the forest. Once the undesirable understory has been eliminated, herbs, shrubs, and desirable reproduction have a good chance of becoming reestablished and a much better chance to develop. The Standards and Guidelines ensure that we will protect any Threatened, Endangered, or Sensitive plants which occur in the area.

12. Opposed to herbicide use because of unforeseen ecological effects on fish, wildlife, and water quality.

Respondents - 023, 030, 088, 110, 118, 122, 127, 130, 131

Forest Service Response - The herbicide glyphosate has been tested and found to have minor effects on fish, wildlife, and water quality. See the discussion in Chapter 4 of the Final EIS and Appendix D of the Forest Plan.

13. Support use of glyphosate herbicide for understory control.

Respondents - 005, 036, 051, 069, 072, 075, 076, 080, 085, 091, 103, 109, 113, 132, 134, 135, 139, 147, 153, 161, 284, 288, 298, 299, 300, 312, 313, 308, 334, 340

Forest Service Response - Same response as comment 9.

14. DEIS does not adequately discuss the risk of herbicide use.

Respondents - 330

Forest Service Response - We have added additional discussion to the Final EIS and Appendix D of the Forest Plan concerning herbicide effects and risks. The Forest will employ the safest herbicides available that are effective in controlling fern and striped maple.

Harvest Method Amounts

15. Selection harvesting cannot be successful because of high deer populations.

Respondents - 042, 069, 133, 284

Forest Service Response - We agree that deer can have a dramatic effect on the success of uneven-aged management on the Allegheny National Forest. We have included the appropriate regeneration activities (fencing and herbicide treatment) and have picked the most appropriate locations where deer have a lower impact, in order to help ensure regeneration success. The effects of the agreement between the Allegheny National Forest and the PA Game Commission to reduce the deer density over the next few decades will also help significantly. The preferred alternative includes only a modest amount of uneven-aged management.

16. Prefer selection cutting over clearcutting as the primary harvest method used on the Allegheny National Forest. Main reason given - less disruptive to wildlife and environment.

Respondents - 016, 049, 071, 083, 088, 104, 110, 115, 117, 122, 124, 127, 175, 191, 211, 220, 311

Forest Service Response - The majority of the regeneration cutting we plan is shelterwood cutting not clearcutting. We have revised the tables in the DEIS and Forest Plan to clarify this point. The shelterwood removal cut will be made 5 to 10 years following the shelterwood seed cut.

Selection cutting may be less disruptive to some wildlife and the environment than even-aged cutting; however, even-aged cutting is necessary to perpetuate shade intolerant species like white ash, yellow poplar, and black cherry. These species provide an alternate mast crop in years when tolerant species fail to produce mast. Clearcutting also provides habitat for wildlife species that are associated with the early stages of forest succession (ruffed grouse, deer, woodcock, snowshoe hare, cottontail rabbit, chestnut-sided warbler, etc.) and adds visual variety to the landscape. In addition, the Allegheny National Forest is one of the few places where high-value, furniture quality, black cherry grows. The Forest Service would not be managing much of the land for its highest and best use if the primary harvest method descriminated against black cherry.

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17. Increase clearcutting acres.

Respondents - 069, 087, 126, 153, 165, 284

Forest Service Response - The answer to this question requires discussion of the terms final harvest, clearcutting, and shelterwood cutting. Final harvesting includes both clearcutting and shelterwood cutting methods. We use predominantly the shelterwood method in order to ensure stands regenerate successfully. Appendix D of the Forest Plan provides additional information about the ratio between the amounts of these two practices.

Additional final harvest beyond the level chosen would lower the present net value of Alternative D and is not needed to achieve other resource objectives. The amount of final harvesting is controlled by the following: 1) the acreage assigned to Management Areas 1, 3, and 6.2; 2) the rotation ages for each timber type; 3) the age when each timber type reaches financial maturity; and 4) the requirement to maintain a nondeclining flow of timber volume. The responses to comments 1, 20, and 25 provide additional information.

18. Reduce clearcut acre size.

Respondents - 016, 071

Forest Service Response - We have not made any changes to the maximum size of these temporary openings. The maximum size limit established by NFMA is 40 acres. This is a maximum and not our average, which has historically been 20-25 acres.

Timber sales with temporary openings closer to the 40 acre maximum are more cost-efficient to prepare, to administer, and to carry out post sale cultural treatments. Opportunity for silvicultural success is better for intolerant species, such as black cherry and ash. Deer browsing pressure is more evenly distributed. Some Management Areas, such as 2, 6.1, 6.2, and 6.3, have maximum clearcut size limits less than 40 acres due to overall resource management objectives.

19. Support use of clearcutting on ANF where appropriate for stand regeneration.

Respondents - 103, 108

Forest Service Response - Same as response to comment 17.

Rotation Lengths

20. Do not carry cherry stands beyond 80 years or financial maturity.

Respondents - 113, 135, 288, 313, 319

Forest Service Response - We have added Table C-6 in Appendix C of the Forest Plan which displays the rotation ages actually chosen for the preferred alternative. When selecting rotation ages for even-aged management, it is necessary to consider many factors, such as biologic limitations of the tree species being managed, economic maturity, harvest flow requirements, desired landscape character, wildlife needs, and culmination of mean annual increment. The amount of temporary openings created over time for wildlife habitat, maintaining old-growth forests for wildlife, large-tree character for certain recreationists, and the effect which the frequency of harvest entry has on some forest users are also important. The rotation age objectives assigned to the various management areas recognize these various concerns.

21. Support an increase in rotation age.

Respondents - 012, 041, 143, 148, 151, 289, 311, 330, 332

Forest Service Response - Same as response to comment 20.

22. Support longer rotation ages because it will create a big tree appearance and promote greater diversity in wildlife habitat.

Respondents - 016, 054, 064, 070, 078, 093, 118, 163, 165, 175, 180, 282, 285, 329, 335

Forest Service Response - Same as response to comment 20.

23. Support longer rotation ages because it will generate higher value timber.

Respondents - 012, 041, 054, 055, 064, 067, 070, 073, 175, 289, 294, 311, 330, 335

Forest Service Response - See the response to comment 20. We agree that longer rotation ages will generate higher, undiscounted, timber values up to the point where the trees begin to deteriorate. Another important point, though, which occurs before this age is where the tree reaches its maximum

present net value, or financial maturity. This calculation integrates the effects of discounting, for the National Forests at a 4% rate. Table C-6. which we have added in Appendix C of the Forest Plan, shows that we will actually implement a wide range of rotation ages over the next few decades.

24. Support rotations summarized in DEIS for Alternative D.

Respondents - 109

Forest Service Response - Same as response to comment 20.

Land Assignments for Timber Management

25. Assign less acres to Management Area 6.1 and more to Management Areas 3 and 6.2 for even-aged management.

Respondents - 025, 051, 061, 068, 076, 080, 085, 091, 109, 112, 113, 133, 134, 167, 298, 299, 302, 308, 312, 315, 318, 323, 326, 332, 334

Forest Service Response - Since many people expressed concern about the management area land assignments shown in the draft documents, we have adjusted it for the preferred alternative in the Final EIS and the Forest Plan. Table 2-10 in the Final EIS shows the final management area allocation.

Some people favored more even-aged management and less semi-primitive recreation opportunities, while others desired less even-aged management and more semi-primitive recreation areas. The sportsmen also questioned the lack of short rotation, even-aged management for wildlife. To address these many comments, we adjusted Alternative D to obtain a more reasonable compromise between all interest groups. We reduced the land assigned to Management Area 6.1 by 22 thousand acres, and we increased the land assigned to Management Areas 1 and 6.2 by 7 thousand and 15 thousand acres, respectively. These changes will increase even-aged management, the area designated for semi-primitive non-motorized recreation, and the area designated as short rotation even-aged management for wildlife.

26. Support the idea of allowing some timber harvest in Management Area 6.1.

Respondents - 034, 091, 302

Forest Service Response - The Standards and Guidelines for Management Area 6.1 do permit timber harvest to meet wildlife objectives. For more information see Chapter 4 in the Forest Plan. Timber harvest also helps meet visual objectives.

27. Assign no land to Management Area 6.2 since it is managed essentially as wilderness for 30 out of each 40 years.

Respondents - 135, 288, 300, 313

Forest Service Response - We agree they are similar; however, we will be harvesting a significant amount of timber from Management Area 6.2 while no timber will ever be harvested from wilderness areas. In addition, even though both management areas will offer a SPNM recreation experience, Management Area 6.2 will show considerable evidence of past management activities. For further information, consult comment 25 and the Standards and Guidelines (Forest Plan) for Management Areas 5 and 6.2.

28. Disagree with concept of Management Area 6.1. We see less benefit to wildlife in Management Area 6.1 than from those management areas which permit timber harvest.

Respondents - 091, 133, 170, 300

Forest Service Response - Management Area 6.1 represents a valid management option designed to emphasize those wildlife species, such as bear and turkey, which require significant amounts of mature forest habitat. This is significantly different from other management areas where timber is managed intensively under much shorter rotations. These areas provide excellent habitat for wildlife, such as ruffed grouse, woodcock, and deer. Timber harvesting is permitted in Management Area 6.1 but only when done in support of the areas wildlife objectives. For additional information, see Chapter 4 of the Forest Plan.

29. Reduce the acreage of Management Area 6.1 in Alternative D.

Respondents - 025, 161, 299, 325

Forest Service Response - Same as response to comment 25.

30. Assign more acreage to Management Area 6.1.

Respondents - 015, 037

Forest Service Response - Same as response to comment 25.

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31. Combine Management Areas 6.1 and 3. There is little difference between them, except with respect to timber harvesting. Recreation interests could be protected through restricted access.

Respondents - 113

Forest Service Response - The management emphasis on these two management areas is quite different, and they both present valid management options. MA 3 will be managed intensively for timber using even-aged management. It will provide for an RN Recreation Experience and contain a well developed road network. In contrast, MA 6.1 will be managed intensively for dispersed recreation and wildlife objectives. Timber management activities will be done only in support of these objectives. The management area will provide for a SPM Recreation Experience, contain a limited number of roads, and project a "big tree" appearance. For more information, see the discussion for each in Chapter 4 of the Forest Plan.

32. Support the assignment of 46,000 acres to Management Area 4.

Respondents - 129

Forest Service Response - Though some of the alternatives did call for development of softwood management areas, none were included in the optimal management area assignment for the preferred alternative. Conifer timber values are not very high compared to those for hardwoods. In addition, there appears to be little demand forest-wide for significant increases in softwood outputs. There are, however, approximately 19 thousand acres of scattered conifer stands now on the Forest. These stands will be maintained and managed as inclusions within other Management Areas.

The scattered nature of these existing conifer stands prevents us from organizing them into a separate management area. Nonetheless, they do increase diversity and are very valuable to wildlife.

33. Move 30,000 acres from Management Area 3.4 to 6.2.

Respondents - 178

Forest Service Response - See response to comment 25.

34. Increase use of uneven-aged management on the Allegheny National Forest.

Respondents - 307, 330

Forest Service Response - See the responses to comments 15, 16, and 25.

35. Keep acres of uneven-aged management to a bare minimum.

Respondents - 042, 051

Forest Service Response - See the responses to comments 15, 16, and 25.

36. We believe the Plan concentrates too heavily on development.

Respondents - 040

Forest Service Response - Resource use and development is appropriate to meet certain recreation, wildlife, timber, and mineral needs, though it is also appropriate to have areas where little development occurs. Our demand analysis showed there is a need for both on the Forest.

The amount of development in an aternative relates directly to that alternative's resource management objectives and the resulting acreages assigned to each management area. For more information on the assignment of management area acreages, see comment 25.

37. Timber suitability analysis is incomplete.

Respondents - 330

Forest Service Response - More information regarding the timber suitability and financial analysis has been included in the Appendix B-FEIS, page B-27.

Other Comments Related to Timber Management

38. Opposed to any oak conversion because of impacts on wildlife, recreation, aesthetics, and local timber markets.

Respondents - 033, 061, 069, 072, 076, 080, 100, 103, 113, 135, 139, 161, 171, 288, 298, 307, 308, 313, 318, 323, 330, 332, 336, 340

Forest Service Response - We have revised the preferred alternative in the Final EIS and Forest Plan to prohibit the conversion of any Oak timber type to Allegheny hardwood timber type for decades 1 through 15. Opposition to the conversion of Oak spanned all interest groups, and we did not receive any comments supporting it. Eliminating conversion will help to maintain vegetative diversity, support a diversity of lumber products, provide mast for wildlife, and maintain aesthetic diversity for recreationists.

39. Support optional pulpwood.

Respondents - 080, 085, 113, 308, 334

Forest Service Response - The Standards and Guidelines for Management Areas 3 and 6.2 have been revised. We have added to the 2400 Standards and Guidelines the option to require removal of both sawtimber and pulpwood from the timber sale area. This change gives the land manager more flexibility in determining what timber products will be required to be removed on a sale-by-sale basis. The land manager can choose to allow pulpwood to be removed on an optional basis, to be excluded from the sale, or to be required to be removed.

40. Concerned about logging steep slopes and its effect on forest soils.

Respondents - 175

Forest Service Response - We are also concerned about timber harvesting on steep slopes, but we feel the documents adequately address this issue. Approximately 5 percent of the land base is on slopes classified as 40 percent or greater. Vegetative management is expected to be minimal on most of these areas in Alternative D though some areas will have timber harvesting. See Figure 4-6 in the FEIS for more information. Forest Plan implementation in such areas will consider timber yarding and skidding systems which can transport wood products without creating a dense road and skid-trail system. All timber management activities, regardless of slope, will follow the applicable Standards and Guidelines for the management areas. Forest Service specialists, trained in timber sale layout, design, and harvesting systems will also be involved in planning timber management activities on steep slopes.

41. Support use of pesticides and biological agents for control of destructive insects.

Respondents - 051

Forest Service Response - The 1900 and 3400 sections of the standards and guidelines mention these as options we will consider in the event serious pest problems occur. We will complete additional analysis at the time the outbreak occurs to determine the best treatment approach to take. Many of the goals for timber management and recreational use given in the Plan and FEIS would not be achievable in the event of a serious insect or disease outbreak if intergrated forest pest management could not be implemented to control it.

42. Support a cutting schedule aimed at creating balanced age classes.

Respondents - 332

Forest Service Response - The cutting proposed in each alternative leads to a more even distribution of age classes than we now have. One of the original alternatives we considered was designed to provide for an equal distribution of timber age classes by the end of our planning horizon (150 years). This alternative was rejected however, because it would not provide for a non-declining flow of timber volume. For further information consult Chapter 2, page 21 of the Final EIS.

43. Opposed to any deficit sales.

Respondents - 289

Forest Service Response - Our long-range timber management objective is to produce positive returns at a 4% discount rate. Individual sales may, or may not, meet this objective. Timber management is a long-term process and in some cases may require offering a deficit timber sale. This same sale area, however, may produce very high-value timber during the follow-up harvest entries and result in a very good economic return over the long-term. Deficit sales may also be used to achieve the wildlife, recreation, and other multiple use objectives specified in the Forest Plan. In general, deficit sales are very uncommon on the Allegheny National Forest, with our last such sale being sold in 1978. Our timber sale preparation and design process tries to minimize the likelihood of creating a deficit sale.

44. Support management of the Allegheny National Forest for cherry.

Respondents - 169

Forest Service Response - Emphasizing black cherry management on this Forest is a sound management decision, but we also need to retain a significant component of other species within these Allegheny hardwood stands. Black cherry is one of the highest valued species that grows on this Forest and it produces positive economic returns. Black cherry can be sustained and improved by following the stocking and reforestation guides now being used on this Forest.

45. Plan should include a 2-3 percent real price increase for timber.

Respondents - 012, 325, 334

Forest Service Response - We considered using a real price trend for timber values, but decided not to include such trends in the Final FORPLAN analysis. An analysis of timber value trends for the past 3 decades did indicate some change in real values, but this study was based on Regional Price Data and did not reflect local conditions. In addition, there was some uncertainty as to whether or not these trends would continue into the future. Our analysis also indicated that the real value of some species increased, some remained about status quo, and some decreased.

46. Large amounts of even-aged management will result in black cherry monoculture.

Respondents - 068

Forest Service Response - The Forest recognizes this problem and is working with Research to find ways to prevent this. We commonly leave residual, slower growing, tolerant trees (beech, sugar maple, and hemlock) in final harvest areas to insure that they will be a component of the next stand. Bringing the deer herd in line with the carrying capacity of the forest will give minor species now being browsed out of existence a chance to develop in reforestated areas. Retaining aspen and oak stands also helps.

47. Timber management should be on the best sites, leaving less productive sites to recreation.

Respondents - 060

Forest Service Response - In general, we have allocated timber management to the better sites on the Forest, though some of the large areas where we are featuring semi-primitive recreation do include good timber sites within their boundaries.

Developed recreation covers relatively small areas. Because of the high cost of development and the permanent nature of developed recreation areas, sites that are best suited for the type of recreation that will be encouraged for the area should be chosen, regardless of the timber productivity of the land.

48. The Plan undervalues the need and value people place on high-quality timber products.

Respondents - 325

Forest Service Response - The yield tables used in the FORPLAN analysis reflect the timber values (stumpage) received by both industry and the Allegheny National Forest. They also reflect the local mixtures of tree species, log grades, and log sizes. We recognize that this does not reflect the value added in the manufacturing process, but it is consistent with the process used to establish other resource values, i.e. recreation RVD's. Such consistency is essential to our FORPLAN analysis and provides a basis for evaluating the trade-offs between resources. A discussion on timber yield coefficients is contained in Appendix B - Final EIS, Chapter III, Section E and Chapter IV, Section D.

To address the second part of your statement, we will assume that your reference to "need" can be interpreted to mean "demand" for high-quality timber. The Plan indicates that demand is very high and the Forest could at least double its sawtimber output. Consult the Forest Plan, Chapter 2 and Appendix B - Final EIS, Chapter IV, Section B for a complete discussion of our demand assumptions.

49. Believe pulpwood is undervalued.

Respondents - 134

Forest Service Response - Pulpwood values have historically been low on the ANF, markets are sporadic, and pulpwood values are an insignficant part of the total timber receipts. During FY 81-84, the ANF sold $31,101,156.00 of timber, of which roundwood pulpwood roundwood contributed $141,740.00. This is approximately 1/2 of one percent of the timber receipts during this four year period. For these reasons, no economic benefits were assigned to hardwood roundwood in the FORPLAN model.

Pulpwood removal is, however, a necessary part of a stands silvicultural treatment and it does support local industry. For more details, see Appendix D of the Forest Plan.

50. Hammermill can and will provide a market for all pulpwood.

Respondents - 166, 167

Forest Service Response - Same as response to comment 39.

51. Support required removal of pulpwood.

Respondents - 103, 105, 112, 147, 167, 170

Forest Service Response - Same as response to comment 39.

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52. Support a policy of charging fees for firewood on the Allegheny National Forest.

Respondents - 017

Forest Service Response - The demand for personal use firewood has grown in recent years, along with the cost of administering the program. The Plan implements a charge system for personal use firewood to offset the administrative costs. Occasionally, exceptions may arise where free-use firewood permits will be issued to meet specific management objectives.

53. Leave large portions of the Forest alone until a firm resource data base is developed.

Respondents - 337

Forest Service Respose - The Forest has used the best information available from existing resource data bases to complete the Forest Planning analysis. We recognize the areas where we need to collect more information, and we will concentrate on these during implementation and monitoring. If new information collected sheds new light on the management problems, invalidates some of our conclusions, or indicates we should deviate significantly from the Forest Plan, we will issue appropriate amendments to the planning documents.

RESPONSE TO PUBLIC COMMENT

Management Problem 4 - Wildlife Habitat

Deer Population

1. *Support efforts to reduce deer herd.*

Respondents - 003, 047, 134, 138, 289, 319, 325, 332, 336

Forest Service Response - We agree the deer herd should not exceed the current carrying capacity of the habitat. The habitat condition will be monitored and the deer population goal will be modified in cooperation with the Pennsylvania Game Commission as changes occur in carrying capacity or if research studies indicate a change is necessary.

2. Believe policy of increasing deer herd through even-aged management is mutually contradictory with stated timber goals.

Respondents - 149

Forest Service Response - The deer population goal for the Forest will be based on the existing carrying capacity of the habitat. Natural succession, timber management, and wildlife management will result in significant changes in carrying capacity. These changes are reflected in the discussion concerning cumulative effects by alternative located in Chapter 4, Section D, of the Final EIS.

We are using the Pennsylvania Game Commission's county population goals that are based on past research studies. Existing and future research studies by both the Commission and the Forest Service will provide additional information to refine the deer population goals for each county and the Forest.

Even-aged management will be used to improve deer habitat; however, the population goal established in cooperation with the Pennsylvania Game Commission will permit us to achieve our wildlife management and timber management goals.

3. Alternative D misleads the reader about the opportunity for deer hunting.

Respondents - 059

Forest Service Response - The big-game wildlife user days displayed in Figure 2-9 of the Final EIS include hunting use for deer, wild turkey, and black bear. The hunting opportunities for all alternatives, including Alternative D, are based on a balanced timber and wildlife management program. Even-aged management is proposed for a major acreage of the Forest in Alternative D, and the standards and guidelines do assure the habitat requirements for these species has been provided. The discussion concerning big-game hunting opportunities has been revised in the Comparison of Alternatives section of the Final EIS (Chapter 2, Section E). A more detailed discussion of hunting opportunities by alternative is provided in the Cumulative Effects Section (Chapter 4, Section D) of the Final EIS.

4. Support efforts to increase and improve deer or turkey habitat.

Respondents - 029, 036, 087, 132

Forest Service Response - We recognize the importance of the white-tailed deer and wild turkey on the Forest and the need to implement a management program that emphasizes improving habitat for them. We feel the preferred alternative provides a good approach. Our program must also include provisions to provide the habitat requirements of all the other game and non-game species that occur here.

5. Too few deer.

Respondents - 196

Forest Service Response - The deer population exceeds the Pennsylvania Game Commission's goals for some counties within the Forest, based on existing habitat conditions. If we attempt to carry more deer than the range can support, this will have an adverse effect on our wildlife and timber management program, which are designed to improve habitat for deer and many other game and non-game species. The deer population goal for the Forest will be modified as range conditions improve and it becomes feasible to provide a higher deer population. Our wildlife and timber management programs, natural succession, and current research will determine the future deer population that can be provided on this area.

6. Need to qualify what agreements on deer management exist between the Forest Service and Pennsylvania Game Commission.

Respondents - 175

Forest Service Response - The management indicator species were not selected to represent songbirds or game species. They were selected to represent groups of species that have similar habitat requirements. We will monitor these species, as well as habitat diversity, to evaluate the effectiveness of our management program in achieving our wildlife management objectives.

12. Believe adequate emphasis has been given to non-game wildlife habitat.

Respondents - 055

Forest Service Response - See the response to comment 9.

Small-Game Species

13. Alternative D needs to provide more Management Area 1 for grouse management.

Respondents - 013, 025, 026, 028, 034, 035, 038, 050, 338

Forest Service Response - We have modified the management area acreage assignments for Alternative D to include 7,000 acres of Management Area 1. This acreage will be removed from Management Area 6.1.

14. Challenges whether aspen is needed for grouse management.

Respondents - 133

Forest Service Response - Aspen is not essential for grouse management; however, to provide optimum habitat conditions for grouse, it is desirable to manage timber stands on a short rotation of 40-50 years. Aspen is a species that can be managed effectively using a short rotation. The acres selected for Management Area 1 include a high component of aspen; however, other tree species also occur there. Management emphasis will be to provide a diversity of habitat conditions to increase the number of grouse activity centers. This will be accomplished by providing desirable timber age classes located in optimum juxtaposition.

15. Need to make more investments in small-game habitat management.

Respondents - 002, 016, 099, 126

Forest Service Response - The Forest plans to utilize timber management practices wherever feasible to improve small-game habitat. This is the most cost-effective way to provide many types of small-game habitat. Even-aged management can be used to improve habitat for ruffed grouse, snowshoe hare, New England cottontail, and woodcock. We do manage for squirrels and raccoons by providing a significant acreage in mast producing timber size classes and by providing den trees.

Direct wildlife habitat improvement practices will improve small-game habitat where timber management practices are not feasible. Many habitat management practices improve conditions for both big-game and small-game species. For example, ruffed grouse and wild turkeys have similar brood habitat requirements and planting conifers to provide winter cover is beneficial to deer, wild turkey, ruffed grouse, and snowshoe hare. These are just a few examples to emphasize that many habitat improvement practices are not mutually exclusive to big-game or small-game species. Refer to the Forest Plan (2600) Standards and Guidelines for additional information on habitat improvement practices.

In addition, we have modified Alternative D to exclude conversion of Oak timber type to Allegheny hardwoods. This will result in positive benefits for the squirrel population.

Finally, we have modified the land allocation for Alternative D to include 7,000 acres of Management Area 1 which has intensive small-game habitat management.

Fish

16. Support an increased fisheries management program, including more structures and fish stocking.

Respondents - 002, 013, 016, 019, 028, 035, 036, 038, 050, 094, 100, 115, 140, 142, 153, 256, 280, 290

Forest Service Response - We have modified the preferred alternative to include a more intensive fisheries management program. This includes an increase in the number of fish habitat improvement structures, particularly in the Allegheny Reservoir. See Forest Plan (2600) Standards and Guidelines for additional information.

Fish stocking in the Allegheny Reservoir will be based on fishery surveys by the U.S. Fish and Wildlife Service to determine trends in fish populations. Periodic stockings of desirable species will be scheduled as necessary

there. Fingerling brown trout will also be stocked in the lower sections of selected streams to complement the existing population of this species in the reservoir. These stockings will be a cooperative program between the U.S. Fish and Wildlife Service and the Pennsylvania Fish Commission.

The stocking of catchable trout in streams on the Forest will be based on operation FUTURE, as implemented by the Pennsylvania Fish Commission.

We will continue to obtain base line data for the streams in the Forest in cooperation with the U.S. Fish and Wildlife Service, Pennsylvania Fish Commission, Department of Environmental Resources, and the Army Corps of Engineers. Our land managers and specialists will use this information to evaluate the effects of our management practices, as well as oil and gas development, on stream habitat.

17. Document had little to say about preservation of fish habitat.

Respondents - 099

Forest Service Response - The standards and guidelines which protect fish habitat are included in the 2500 Water and Soil Management sections of Chapter 4 of the Plan. We have revised the 2600 section of the Plan so that it references the discussion concerning the protection of water quality and aquatic habitats in the 2500 section.

18. Structural fish habitat program is not good. It changes free-flowing streams.

Respondents - 083

Forest Service Response - The Plan includes provisions to construct one warm water impoundment per decade and numerous fish structures along the shoreline of the Allegheny Reservoir. The fish structures along the reservoir shoreline should not affect stream flow, but the impoundments will. There is a slight tradeoff of free-flowing stream habitat for impoundment habitat at the site of the new impoundment built each decade. These types of developments support the management objectives of Alternative D. Other alternatives considered differing amounts and placement of such improvements.

We will complete a site-specific project analysis later to determine the most appropriate location for each impoundment and to evaluate site-specific effects on all resources, including the existing fishery. For more details, see forest-wide (2600) Standards and Guidelines.

19. No shoreline fishing should be allowed on the Allegheny Reservoir (concern for littering).

Respondents - 087, 132, 153

Forest Service Response - We agree that littering can be a problem any place on the Forest where dispersed recreation occurs, including shoreline fishing on the Allegheny Reservoir. The solution to this problem can be achieved through an information and education program and through enforcement of existing regulations.

Responsible fishermen should not be penalized for the actions of a few who are irresponsible. Fishing along the shoreline of the reservoir can provide a significant amount of recreation use for people that cannot afford to purchase a boat or canoe.

Other Wildlife Comments

20. More emphasis on managing for and/or protecting wildlife.

Respondents - 009, 016, 022, 024, 025, 029, 055, 079, 081, 083, 084, 088, 097, 100, 120, 131, 124, 144, 165, 188, 192, 194, 221, 234, 254, 256, 280, 294, 321, 327, 331, 336, 340

Forest Service Response - We have increased the wildlife management investments in Alternative D and have expanded the wildlife discussion in the Chapter 4 of both the Final EIS and the Forest Plan. For additional information, see the responses to comments 4, 7, 9, 15, and 16 above.

21. Adopt a hunting and fishing stamp.

Respondents - 049, 161, 332, 132, 320

Forest Service Response - The proposed "National Forest Hunting and Fishing Stamp" that was included in some alternatives was not included in the preferred alternative. The proposal received little support from state agencies and the public.

22. Reduce wildlife investments in Alternative D.

Respondents - 121, 134, 153, 289

Forest Service Response - Same as response to comments 20 and 27.

23. Make additional habitat improvement for Threatened and Endangered Species.

Respondents - 117, 125, 152

Forest Service Response - Threatened and Endangered Species, including other "Species of Special Concern in Pennsylvania," will receive special emphasis in the management program. We have revised the discussion about these species in Chapter 4 of the Forest Plan and in Chapters 3 and 4 of the Final EIS. In addition, we have strengthened the Standards and Guidelines to protect or enhance habitat for all "Species of Special Concern in Pennsylvania."

The Allegheny National Forest also has a wildlife objective to host an active pair of bald eagles by the year 2000.

24. Discussion in the Forest Plan and DEIS on Threatened and Endangered Species management and protection is not complete.

Respondents - 158, 175, 179, 338

Forest Service Response - Same as response to comment 23.

25. Add to Forest's list of Threatened and Endangered Species the rattlesnake and the small-whorled pogonia.

Respondents - 025, 179

Forest Service Response - The rattlesnake has been added to the Forest's Species of Concern list. We have strengthened the Standards and Guidelines to provide additional protection for this species, with special emphasis on protecting den sites.

We have not added the small-whorled pogonia to the Forest's Species of Concern list at this time since it has not been recorded in this area. The Plan now states this species may occur here, and we have strengthened the Standards and Guidelines to provide this species additional protection if we discover it on the Forest.

26. Retain savannahs for wildlife and recreation.

Respondents - 033, 054, 068, 148, 307

Forest Service Response - We recognize the importance of existing savannahs for their wildlife and aesthetic values, and no savannahs will be converted to other timber types in Alternative D. Such conversion was called for in Alternatives C and E, but not in the preferred.

27. Support wildlife and fish investments called for in Alternative D.

Respondents - 028, 032, 123

Forest Service Response - We have actually increased the wildlife and fishery investments in Alternative D. This includes both non-structural and structural types of habitat improvement. The program improves wildlife habitat for both game and non-game species, and it improves fisheries habitat in the impoundments on the Forest, with special emphasis on the Allegheny Reservoir fishery. Habitat for "Species of Special Concern in Pennsylvania" will be protected and enhanced where necessary.

28. Make Buzzard Swamp area larger (Management Area 6.3).

Respondents - 033

Forest Service Response - We recognize that similar vegetation types and wetland developments exist in areas adjoining Buzzard Swamp and in other parts of the Forest. These acreages were not included in Management Area 6.3 because of their small size. They will be managed as inclusions in the management area where they occur; however, the management emphasis in the future will be similar to the existing management and will complement existing developments. For further information, refer to the Forest Plan (2600) Standards and Guidelines.

29. Question the need for permanent openings.

Respondents - 133, 332

Forest Service Response - Permanent openings are needed to provide both wildlife habitat diversity and to meet visual quality objectives. We recognize three types of openings from a management perspective. They are savannahs, shrub openings, and areas seeded to grasses or legumes. Each of

these types of permanent openings have particular benefits in providing wildlife habitat diversity and in many cases enhancing the visual quality of an area for forest users. The values associated with each opening are based on the vegetation found there and its spatial position with respect to other habitat components. Openings provide important habitat for both game and non-game species. The majority of the acreage in permanent openings will be managed to provide areas comprised of native grasses, forbs, and shrubs. For further information on the effects of wildlife openings, consult Chapter 4 of the Final EIS.

30. Concerned that proposed management practices could have a significant effect on snowshoe hares.

Respondents - 340

Forest Service Response - We agree that some management practices could have a significant effect on snowshoe hare habitat. However, the regeneration cutting and some of the non-structural wildlife habitat improvements included in the preferred alternative will improve the status of this species on the Forest.

RESPONSE TO PUBLIC COMMENT

Management Problem 5 - Private Oil and Gas Development

Oil, Gas, and Minerals

1. Should identify areas where USA will purchase minerals to limit or stop drilling.

Respondents - 015, 016, 037, 065, 095, 099, 119, 153, 340

Forest Service Response - The 5400 sections of the Forest-wide and Management Area Standards and Guidelines in Chapter 4 of the Forest Plan identify the kinds of areas where we will emphasize USA ownership of minerals to protect surface resources. In general, priority will be given to the purchase of subsurface mineral rights in all wilderness areas, special management areas (MA8), and developed recreation areas. Mineral acquisition will naturally depend on the funding available.

2. Question the legality of setting more stringent OGM regulations in parts of the National Recreation Area where mineral rights are outstanding.

Respondents - 334

Forest Service Response - We developed these Standards and Guidelines to respond to the 1984 Pennsylvania Wilderness Act and its accompanying Congressional record. They do not conflict with existing outstanding/reserved mineral rights.

3. Oppose development of USA minerals.

Respondents - 055

Forest Service Response - Federal law directs us to facilitate the exploration and development of Federal minerals, especially minerals of compelling domestic significance, considering the relative value of the surface and mineral resources. The 2800 section of the Forest-wide Standards and Guidelines (Forest Plan) provides specific information on the development of Federal minerals.

4. The Standards and Guidelines for oil and gas in Management Area 6.4 should apply to all areas within the full pool limit of the Allegheny Reservoir or to other potentially hazardous drainages.

Respondents - 021

Forest Service Response - The 2800 Standards and Guidelines for Management Area 6.4 were developed in response to Congressional direction to provide special protection for surface resources. Private oil and gas development outside the NRA, including areas adjacent to and beneath the Allegheny Reservoir, will be administered according to deed, mineral reservations, and State and Federal law.

5. Responsibility for enforcement of OGM regulations needs to be clarified in the documents and actively pursued. Also, Alternative D's Standards and Guidelines need to be strengthened.

Respondents - 005, 034, 055, 084, 093, 098, 110, 117, 118, 120, 122, 130, 143, 152, 154, 159, 289, 327, 331, 340

Forest Service Response - We have revised the discussion of development of privately-held mineral estates to better explain the management situation. Refer to Chapters 3 and 4 of the Final EIS. We have also revised the 2800 section of the Standards and Guidelines in Chapter 4 of the Forest Plan. The 2500 Section of the Standards and Guidelines provides additional direction.

6. Eliminate or greatly restrict oil and gas drilling on the Allegheny National Forest.

Respondents - 015, 019, 043, 082, 083, 090, 096, 098, 101, 104, 114, 121, 124, 125, 131, 144, 145, 146, 153, 168, 191, 319

Forest Service Response - Approximately 96% of the subsurface estate in the Allegheny National Forest is privately-owned. The owners of these rights have the legal authority to explore and develop their estates for oil and gas. We plan to mitigate the effect of this development on the Federally-owned surface resources by working cooperatively with the subsurface owner to implement the 2500 and 2800 sections of the Standards and Guidelines shown in Chapter 4 of the Forest Plan.

7. More action is needed to clean up brine and prevent additional discharges that pollute our water.

Respondents - 040, 092, 098, 118, 328

Forest Service Response - We agree that brine discharges into streams from oil and gas operations can present a problem to stream water quality. This can best be addressed using existing authorities, such as the Federal Clean Water Act. The 2500 section of the Standards and Guidelines in Chapter 4 of the Forest Plan has been changed to reflect this direction.

8. Need more drilling and construction on the Allegheny National Forest.

Respondents - 115

Forest Service Response - With 96 percent of the mineral estate privately-owned on the Allegheny National Forest, the level of oil and gas development is decided by the owners of these estates. Comment number 3 provides information about development on the 4 percent of the Forest which has federally-owned minerals.

9. Propose no change in the oil, gas, and mineral development policy.

Respondens - 081, 087, 123, 150

Forest Service Response - Current administration of private mineral development on the Allegheny National Forest is based on cooperation and education. State and Federal regulatory agencies have responsibility for enforcing existing laws and regulations. We have kept and will continue to develop close working relationships with these agencies. The 2500 and 2800 sections of the Standards and Guidelines in Chapter 4 of the Forest Plan help minimize environmental effects. They are similar to management guidelines we are already following, and allow development within valid existing rights.

10. Believe FORPLAN runs should have been based on a "high" rather than "low" OGM scenario.

Respondents - 065, 330, 340

Forest Service Response - We agree that it is important to portray the high level oil and gas development scenario. We have revised the information displayed for Alternative D to show the effects of a high oil and gas development scenario on it. In addition, Chapter 4 of the Final EIS now contains an estimate of the effect of the high level of development on all alternatives.

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11. Mineral resources are not discussed in Plan or DEIS. The documents need a better summary and discussion on leasing procedures.

Respondents - 340

Forest Service Response - We have expanded our discussion of mineral resources in Chapter 3, 4, and Appendix B of the Final EIS. This includes discussions on the minerals supply, availability, and demand. Mineral leasing procedures are the responsibility of the Bureau of Land Management, U.S. Department of Interior.

12. The Plan and DEIS need to display the spacial distribution of Federally-owned minerals and need a better discussion of the impacts of mineral development.

Respondents - 055, 330, 340

Forest Service Response - We have discussed the spatial distribution of federally-owned mineral tracts in Chapter 3 of the Final EIS. In addition, we have expanded our discussion on the impacts of mineral development in Chapter 4 of the Final EIS by providing a better analysis and display of the effects of a high intensity of oil and gas development on all resources.

13. Management Area 8 Standards and Guidelines should be more stringent.

Respondents - 338

Forest Service Response - We have strengthened the wording in the 2800 section of the Standards and Guidelines. These standards and guidelines are consistent with the valid outstanding and reserved mineral rights.

RESPONSE TO PUBLIC COMMENT

Management Problem 6 - Wilderness Recommendations

Wilderness and National Recreation Areas

1. Remove some of the Allegheny Islands from Wilderness designation.

   Respondents - 002

   Forest Service Response - On October 30, 1984, "The Pennsylvania Wilderness Act of 1984" was passed to establish the Hickory Creek and Allegheny Islands Wilderness areas. The legislative process included significant public comment from all interest groups. We fully support the designation of all included lands as "wilderness."

2. Support designation of more Wilderness areas including:

   Existing NRA's
   Minister Valley
   Clarion River
   Hearts Content
   Bear Creek Valley

   Respondents - 014, 016, 019, 030, 037, 055, 099, 101, 106, 289, 321

   Forest Service Response - The current management area assignments maximize net public benefits. In addition, Congress has specified in the "Pennsylvania Wilderness Act of 1984" that no new areas will be considered for wilderness designation during this planning period.

   We have assigned the National Recreation Areas to Management Area 6.4; we have assigned Minister Valley and the Clarion River unroaded areas to Management Area 6.1, and we have assigned Hearts Content to Management Area 8. All of these management areas have a special emphasis on recreation and wildlife. For additional information, review the Standards and Guidelines for each of these management areas in Chapter 4 of the Final Plan. Refer also to the discussion in the Final EIS, Chapter 1, Management Problem 6.

3. Limit off-road vehicle (ORV) use in the National Recreation Areas (NRA's).

   Respondents - 071

Forest Service Response - We concur. The Standards and Guidelines for Management Area 6.4 prohibit ORV use in the NRA's. For more information, review these Standards and Guidelines in Chapter 4 of the Forest Plan.

4. Restrict oil, gas and mineral development techniques in the National Recreation Areas.

Respondents - 071

Forest Service Response - Most of the oil and gas rights beneath the NRA's are privately owned. Through the "Pennsylvania Wilderness Act of 1984", Congress directed the Secretary of Agriculture to develop guidelines for the management of outstanding and reserved mineral rights in these areas. Implementation of these Standards and Guidelines, section 2800 of the Forest Plan, will protect these surface resources while recognizing private subsurface rights.

5. Purchase more mineral rights in potential wilderness areas.

Respondents - 081, 099, 289, 294

Forest Service Response - See response to comment 2. The "Pennsylvania Wilderness Act of 1984" directs the Forest to manage the remaining Roadless areas for multiple uses. The 5400 section of the Forest Plan Standards and Guidelines provides direction for mineral acquisition. All subsurface acquisition is tied to the availability of needed funds.

6. Keep RARE II areas roadless.

Respondents - 030, 033, 101, 294

Forest Service Response - "The Pennsylvania Wilderness Act of 1984" specifically directs the Forest not to manage existing undeveloped areas for the purpose of protecting their suitability for future wilderness designation. However, the only undeveloped areas not included in the Wilderness/NRA legislation are Minister Valley and Clarion River. These areas have been assigned to Management Area 6.1, and we are not planning any road construction in either of them. For further information, consult the 2300 and 7700 sections of the Forest Plan Standards and Guidelines for Management Area 6.1.

7. Clarion River should be Wild and Scenic River.

Respondents - 037

Forest Service Response - The Clarion River was reviewed for Wild and Scenic River designation in 1968 and was deemed ineligible in the February 22, 1974 Bureau of Outdoor Recreation report to Congress. For additional information, consult Chapter 3 of the Final EIS.

8. No more Wilderness than Congress has already designated.

Respondents - 017, 051, 113, 169, 332

Forest Service Response - See the response to comments 1 and 2.

9. Relax oil and gas development restrictions in National Recreation Areas and permit timber harvest for wildlife.

Respondents - 167

Forest Service Response - The existing oil and gas development Standards and Guidelines respond to the direction Congress gave us in the Pennsylvania Wilderness Act of 1984. Timber harvesting for wildlife is permitted in the National Recreation Areas. See Standards and Guidelines for Management Area 6.4 in the Forest Plan.

10. Assign Management Area 6.1 and not Management Area 3 along perimeter of Wilderness areas.

Respondents - 294

Forest Service Response - A review of wilderness management policy and legislation indicates that the management areas we have designated along the perimeter of the wilderness area are consistent with both sound wilderness management and the intent of the Pennsylvania Wilderness Act of 1984. A significant area around the Hickory Creek Wilderness is assigned to Management Area 6.1. The Pennsylvania Wilderness Act of 1984, Section 9, specifically states that "The Congress does not intend that the designation of a wilderness area under this act lead to the creation of protective perimeters or buffer zones around such wilderness area".

11. Do not publicize Wilderness areas. This will prevent overuse.

Respondents - 294, 324

Forest Service Response - Our information and publications will be directed only to protecting the wilderness resource and maintaining the solitude opportunities in the wilderness areas. If overuse does occur the standards and guidelines provide management direction to control and mitigate this impact. See Forest Plan Standards and Guidelines for Management Area 5 for more information.

12. Emphasize semi-primitive non-motorized recreation in the National Recreation Areas.

Respondents - 159

Forest Service Response - Because of the motorized use on the Allegheny Reservoir, that part of the NRA does not technically meet the standard for semi-primitive non-motorized ROS class. However, the Standards and Guidelines for Management Area 6.4 state specifically that other motorized use will not be permitted within the areas.

13. Describe wildlife management in the National Recreation Area in more detail.

Respondents - 307

Forest Service Response - We have improved the description of wildlife management in the 2600 section of the Standards and Guidelines for Management Area 6.4 in Chapter 4 of the Forest Plan.

14. No "Vegetation Management" on slopes facing the reservoir.

Respondents - 033

Forest Service Response - The slopes facing the reservoir will be managed under a "retention" visual quality objective. This means that the reservoir face will be subject only to those practices which can be done in such a way as to not be noticeable to the casual Forest visitor. In addition, Management Area 6.1 and Management Area 6.4 Standards and Guidelines restrict all vegetative management to activities which support wildlife and recreation objectives.

Other Comments

Other Comments

1. DEIS fails to meet NEPA requirements by failing to examine a true "no action" alternative.

Respondents - 330

Forest Service Response - The National Forest Management Act as reflected in 36 CFR 219.12f(7) defines the "no action" alternative as "... (an alternative which) reflects the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues."

The Council on Environmental quality (CEQ) has published responses to the forty most asked questions concerning CEQ's National Environmental Policy Act Regulations. These are in the Federal Register/Vol. 46, No. 55/Monday, March 23, 1981/Rules and Regulations. Question number 3 asks what the "no action" alternative must include and sites two distinct interpretations which must be considered. The first situation involves an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as the new plans are being developed. In these cases, "no action" is no change from current management direction. CEQ says that to construct an alternative based on on management at all would be a fruitless academic exercise. The second interpretation of "no action" is illustrated in instances involving federal decisions on proposals for projects. Here "no action" means the proposed activity would not take place.

Alternative B fulfills the requirements of both NEPA and NFMA for a "no action" alternative.

2. Opposed to any more land acquisition.

Respondents - 002

Forest Service Response - None of the alternatives discussed in the Final EIS call for either the suspension of all land acquisition activities or total acquisition of all inholdings. Instead, acquisition needs were developed to support the Management Objectives of each alternative. These objectives are described in Chapter 2, Section C of the Final EIS. In addition, the land acquisition policies proposed for the preferred alternative are outlined in Chapter 4 of the Forest Plan under:

a. Forest-wide Standards and Guidelines under the 5400 subheading.

b. Management Area Direction - Consult the list of probable and proposed practices under the sub-heading "5400 - Land Ownership" for each Management Area.

The general areas where we considered acquiring land included the major river corridors where recreation use is concentrated and inholdings which are needed to improve the management efficiency on existing National Forest land.

3. Need less emphasis on market goods in making decisions and more emphasis on non-market benefits, scenery, etc.

Respondents - 005, 019, 043, 084, 099, 128, 178, 180, 290, 311, 330

Forest Service Response - See our response to comment 28, Management Problem 2.

Our decisions are guided by 36 CFR 219.1. This requires a Forest Plan to provide multiple use management and a sustained yield of goods and services from the National Forest System in a way that maximizes long term net public benefits in an environmentally sound manner.

Criteria we used to select the preferred alternative represented market values, non-market values, and environmental consequences. We also considered public preferences expressed as Issues and Concerns and expressed as comments on the DEIS (36 CFR 219.6 and 40 CFR 1500.2(d)).

4. Need to inventory and discuss bogs and other wetland areas in EIS.

Respondents - 337

Forest Service Response - The Allegheny National Forest is located on the unglaciated Allegheny Plateau. Wetlands in general, and bogs in particular, are not typical features of this type of terrain. Wetlands do exist to a limited extent along some of our low gradient, perennial streams and adjacent to some impoundments.

Wetland areas are addressed both in the Final EIS and Forest Plan under the heading of "riparian areas". All of the Forest's major wetland areas are listed in Chapter 3, Section B of the the Final EIS. We agree with the need to inventory riparian areas on the Allegheny National Forest.

Concerning our consideration of wetland areas throughout the analysis, Table 4-2 (Final EIS) shows our evaluation of the effects management practices will have on riparian areas. You will notice that we envision significant effects only for practices within the Wildlife and Minerals Problem Statements. In the other four problem areas, management practices will either have minimal effects or can be mitigated by the Standards and Guidelines listed in the Forest Plan.

5. Forest receipts should be returned to the local area.

Respondents - 169, 190, 194, 201, 208, 219, 250, 252, 257, 271, 334

Forest Service Response - Local governments receive payments from the Federal government based on 1) the amount of National Forest land located within a county and 2) revenues generated from these lands. Both are discussed in detail within the Final EIS - Chapter 4, Cumulative Effects Section, "Plans and Programs of Other Agencies" Subheading, and in Table B-64 of Appendix B - Final EIS.

In addition to these local payments, the Allegheny National Forest receives part of its annual budget from revenues generated on the Forest. Most notable of these are Developed Recreation Rehabilitation Funds and Knutson-Vandenberg (KV) Funds. This money is used to revegetate timber sale areas and to maintain wildlife and recreation opportunities for future generations.

6. Local people's comments should be most important.

Respondents - 085

Forest Service Response - CEQ NEPA Regulations 40 CFR 1502.9(b) and 1503.4, as well as NFMA Regulation 36 CFR 219.6, require that we solicit input from all segments of the public and address their concerns through the planning process.

We do, however, recognize that local people have a vested interest in the management of National Forest's. As such, they will be more informed and are more apt to comment on proposed actions. Therefore, local people do have considerable impact on our policies and actions.

7. Support the acquisition of all inholdings.

Respondents - 101

Forest Service Response - Same as comment 2.

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8. Alternative C is the only alternative that comes close to the multiple use concept.

Respondents - 169

Forest Service Response - 36 CFR 219.3 defines multiple use as the following:

"...the management of all of the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people, ... that some lands will be used for less than all of the resources, ... with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return of the greatest unit output."

With this definition in mind, you can see that all alternatives do meet the definition of multiple use. The management prescriptions which make up each alternative were formulated to meet certain objectives. In some cases these objectives mean some lands must be used for less than all resources. This does not violate the concept of multiple use. Each alternative then receives an allocation of management areas and prescriptions which best achieve the goals and objectives of that alternative. The result then is a management area allocation which best meets the oveall multiple use objectives for that particular alternative.

9. Did not acknowledge significant work completed by other agencies for the Allegheny National Forest.

Respondents - 065

Forest Service Response - Chapters 5, 6, and 8 of the Final EIS were designed to recognize the significant contributions made by individuals and/or groups. We have updated it as necessary to reflect the work contributed by other agencies.

10. Need more emphasis on economics and real dollar values in the planning process. Maximize returns to treasury and promote economic growth.

Respondents - 058, 113, 133, 284

Forest Service Response - See response to comment 3.

11. Need to emphasize monitoring in areas of uncertainty, such as uneven-aged management, oak conversion, and recreation.

Respondents - 091, 167, 180

Forest Service Response - We agree. These issues are addressed in Chapter 5 and Appendix B of the Forest Plan. In addition, many of the research needs identified in Chapter 3 are directly linked to our monitoring and evaluation program.

12. There are more significant effects from developed recreation than shown in DEIS, also from timber, and oil and gas, i.e., soil compaction and erosion).

Respondents - 159, 180, 330

Forest Service Response - We agree that deficiencies exist in our discussion of significant effects and have revised Chapter 4 of the Final EIS as follows:

a. Management Problem #3 - Timber. Expanded discussion on "Roads" to include effects on soil, water quality, energy minerals, noise, and vegetation.

b. Management Problem #3 - Timber. Added information about compaction effects on soil productivity and expanded the discussion of effects of herbicide treatment.

c. Updated Table 4-2 to comply with the changes made in items a) and b) above.

d. Management Problem #5 - Oil & Gas. We have expanded the discussion on effects of mineral development.

In addition, we believe some confusion exists over the information displayed in Table 1 of the Draft EIS Summary Section. Though this table did not include those effects which can be mitigated by adherence to Forest Plan Standards and Guidelines, we have included them in the Final EIS table. We have also revised the discussions in the cumulative effects section of Chapter 4 and have added a section on mitigated effects.

13. Wildlife management should apply in Management Area 9.1.

Respondents - 307

Forest Service Response - Wildlife management activities are not appropriate in Management Area 9.1 since it is designed to minimize the cost of keeping land in public ownership.

The Regional Guide for Region 9 and the Final EIS, Chapter 4, Section B.2. both state the purpose of Management Area 9.1 is to emphasize minimal management and investment. Management activities include only those necessary to 1) protect the life, health, and safety of incidental users, 2) provide protection and management for E/T/S species, and 3) prevent significant loss or impairment to the productivity of the land.

14. Alternative D seems too grandiose, expecting unlimited demand and resources.

Respondents - 040

Forest Service Response - The outputs produced in Alternative D are within the Allegheny National Forest's demand and consumption estimates. Chapter 4, Section B of Appendix B to the Final EIS discusses the development of demand and consumption estimates. In addition, Forest Plan implementation is based on the assumption that the annual budgetary process will provide adequate funding to support the indicated output levels.

15. Propose leaving the Allegheny National Forest in a natural state and minimize expenditures for roads, recreation areas, and trails.

Respondents - 015

Forest Service Response - The alternatives presented in the Final EIS were designed to provide a range of development options to respond to demand. Facility needs and management practices were developed specifically to address the objectives stated for each management area and alternative. Your vision of the Forest is reflected in Alternative A. The Preferred Alternative was selected because it responded to public demands for development and maximized net public benefits. It does contain a significant amount of land in Management Areas 5, 6.1, and 6.4 which will have minimal development. For additional information, consult Chapter 2, Section D, of the Final EIS and the Record of Decision.

16. Keep the Forest pretty much the way it is now with little change.

Respondents - 019

Forest Service Response - Same as comment 15, except that you prefer Alternative B.

17. Do not sacrifice enforcement of regulations in favor of more private profit.

Respondents - 290

Forest Service Response - We fully intend to implement the provisions outlined in the Forest Plan. Most can be implemented directly but several fall within the jurisdictional authority of other State and Federal agencies. In these situations, special cooordination is required.

Water Quality

18. Concern for groundwater and stream quality due to oil and gas drilling, road construction, and logging operations.

Respondents - 059, 106, 154, 163, 324, 337, 338

Forest Service Response - We agree it is important to protect water resources. By applying the section 2500 Standards and Guidelines shown in Chapter 4 of the Forest Plan, and by working cooperatively with regulatory agencies to achieve enforcement of the state and federal laws relating to water, we will minimize the effects of these activities on groundwater and stream water quality.

19. The Allegheny National Forest should not decrease the quality of watersheds. Need to institute standards which allow for no more than 25-30% of a watershed area to be cut each decade.

Respondents - 291, 337

Forest Service Response - We agree that management activities should maintain the quality of streams and watersheds. Furthermore, the Forest Service has a responsibility to actively restore watershed areas that are in declining condition. The Standards and Guidelines for soil and water (section 2500 of the Standards and Guidelines in Chapter 4 of the Forest Plan) are designed to protect and enhance watershed condition. The effectiveness of these Standards and Guidelines will be evaluated by monitoring described in Chapter 5 of the Forest Plan.

We agree we must manage the extent of timber cutting in watersheds to reduce adverse cumulative effects such as accelerated erosion and sedimentation, stream temperature effects, and peak flow increases. Management of other resources, such as wildlife habitat and visual quality, also requires control of the extent and spatial distribution of timber cutting. The Forest-wide Standards and Guidelines for 2400 (under Temporary Openings) and 2500, and the Management Area 3 Standards and Guidelines for 1900, 2400, and 2600, provide sufficient guidance to prevent overcutting in any watershed.

20. Concern as to whether the DEIS has addressd activities which require a permit under Section 404 of the Clean Water Act.

Respondents - 337

Forest Service Response - We have added a section to the 2500 Forest-wide Standards and Guidelines (Forest Plan) that speaks to the relationship of Forest activities and the dredge and fill (Section 404) section of the Federal Clean Water Act.

21. Need to address the potential negative effects of fertilization on water quality, aquatic and terrestrial life, and human health.

Respondents - 330

Forest Service Response - Potential negative effects of fertilization were examined during the environmental analysis of alternatives and most were concluded to be mitigated or insignificant (see Table 4-2 and Sections C, D, and E in Chapter 4 of the FEIS). This analysis was based on a review of the literature and past experience with fertilization, including extensive water quality monitoring. To clarify our mitigation of potential negative effects, we added a guideline on buffer strips to the 2500 Forest-wide Standards and Guidelines in the Plan.

Air Quality

22. Maintain Class II air quality standards on the entire Allegheny National Forest (including Wilderness).

Respondents - 167, 318

Forest Service Response - Class II air quality stndards apply to the entire Commonwealth of Pennsylvania. These standards will continue to apply to the entire Allegheny National Forest, including the Wilderness areas, unless the State reclassifies the area.

23. Hope that Wilderness is classified under Class I air quality standards.

Respondents - 055

Forest Service Response - Most of the United States and Pennsylvania are designated as Class II for air quality protection. The State has authority for redesignating areas from Class 2 to Class 1. During eight years since the Clean Air Act was amended, redesignation has not occurred nationally except for several actions taken by Indian tribes. No state has redesignated a Class 2 area to Class 1. We will work to protect wilderness resources from air pollution through close coordination with the State.

24. Need discussion on the impacts of management activities on air quality.

Respondents - 337

Forest Service Response - Effects of management practices on air quality were examined during the environmental analysis. The interdisciplinary team concluded that potential effects were minor, localized, and short term. Contacts with the state regulatory agency, the Department of Environmental Resources, indicated that DER does not consider these types of effects to be in need of special mitigation. Because the environmental analysis showed that the potential effects are minor and not in need of regulation or mitigation, we did not include this topic in the final EIS.

Acid Rain/Yield

25. Need to consider consequences of acid precipitation on timber growth, the revegetation of clearcut acres, and hunting.

Respondents - 023, 055, 099, 294

Forest Service Response - We did not address potential effects of management practices on an ecosystem subjected to acid precipitation, because enough information is not currently available to evaluate such effects on the Allegheny National Forest. Research on terrestrial impacts of acid precipitation has lagged behind the research on aquatic effects. Recent investigation of growth declines in eastern forests indicates uncertainty as to whether acid precipitation is the primary air pollutant involved or whether other air pollutants, particularly ozone, are the more likely candidates.

We are concerned about the possible effects of acid precipitation and other pollutants on long-term forest productivity and species composition. We anticipate that many of the questions regarding the effects of air pollutants on forests will be answered in the National Acid Precipitation Assessment Program. Forest Service researchers in several locations in the east are involved in the program. The results of the first ten years of this research program will probably be available for the first revision of the Forest Plan in 10 to 15 years. This problem is identified in our Research Needs list in the Forest Plan.

26. Need to discuss effect of acid rain on fish.

Respondents - 055, 099

Forest Service Response - Possible effects of acid precipitation on fish populations on the Allegheny National Forest is of concern, given the low natural buffering capacity of streams on the Forest and the very acidic precipitation occuring in western Pennsylvania. However, scientific studies linking acid precipitation to adverse effects on fish are lacking for the Allegheny Plateau. Determining the effects of acid precipitation on fish populations is also complicated by effects caused by other pollutant sources, such as oil and gas development. Given the lack of scientific data for this National Forest, we cannot quantify acid rain effects on fish. This concern is identified as a Research Need in Chapter 3 of the Forest Plan.

Roads

27. Limit new road construction.

Respondents - 007, 015, 016, 017, 019, 033, 037, 043, 053, 055, 060, 084, 089, 090, 096, 098, 100, 124, 141, 146, 152, 153, 156, 165, 178, 180, 211, 221, 226, 230, 281, 291, 321

Forest Service Response - When accessing an area, the Forest Service limits new road construction to the minimum mileage necessary due to the high initial road construction cost, the long term commitment, and environmental concerns. Forest Service policy is to build only those roads needed to manage the resources. Due to resource emphasis, some management areas have limited, if any, need for roads. We have developed procedures which ensure that the minimal amount of road and the appropriate standard of road are built in each area, based on the resource management objectives and the environmental constraints. The procedures are now more fully explained in the Final EIS, Chapter 3, Roads. The appropriate road standards for each management area are described in the Forest Plan, Chapter 4, section B, Standards and Guidelines for 7700 - Transportation System.

When we mapped management areas, we considered the presence or absence of existing roads and the road needs. First, we allocated management areas requiring roads to land areas already roaded. Next, we attempted to assign management areas that didn't require roads to areas that are unroaded. This could not be done in all cases; and, therefore, some roaded areas were allocated to management areas (6) which do not need roads and some unroaded areas were allocated to management areas (2 & 3) which needed roads.

The road construction estimates shown in the Forest Plan and Final EIS are based on coefficients developed for FORPLAN and represent average values. For the preferred alternative in the Final EIS and Plan, we have refined the estimates of road mileage to reflect the actual allocation to the land. These new estimates are shown in Tables 4-12 and 13 of the Final EIS.

Since completion of the DEIS, the Forest has implemented the Traffic Service Level Concept. This concept is explained in the Final EIS, Chapter 3, Roads - Road Construction. Because of the TSL concept, some very low standard roads which were formerly considered temporary have been added to our road system causing the total miles of system road to increase. Also included in Tables 4-12 and 4-13 are mileage estimates of temporary roads needed to implement the alternatives.

28. Need to use recreation, wildlife, and fire dollars to help build and maintain roads.

Respondents - 113, 134, 135, 288, 313

Forest Service Response - Forest Service policy is to have the benefitting resources fund their share of road construction. PL88-657 states, in essence, that a timber purchaser can only be held responsible to construct that standard of road necessary to get the timber out (with consideration of environmental concerns). A higher standard of road needed for other resource management or to facilitate the harvesting of timber which is not part of the immediate sale will be funded from supplemental appropriations.

29. Need to limit roads in certain special areas - National Recreation Areas, Wilderness, Bear Creek Valley, near existing trails, roadless areas.

Respondents - 289, 330

Forest Service Response - Access will be limited in those areas where resource management dictates. There will not be any roads in Wilderness Areas. The National Recreation Areas will be managed using existing roads. Before we construct any new road, we complete a project analysis to determine its feasibility and to identify the effects such a facility will have on an areas special values. Local roads within the Bear Creek Valley will be limited to those necessary for Management Area 3.

30. Opposed to any more road construction, "... we have enough roads already".

Respondents - 011, 019, 045, 049, 052, 053, 068, 079, 083, 101, 118, 132, 144, 148, 190, 204, 213, 216, 217, 218, 221, 223, 234, 239, 243, 250, 254, 265, 324, 331

Forest Service Response - See the response to comment 27.

31. Support road construction and/or keeping more roads open for timber, mineral exploration, hunting, and sight seeing.

Respondents - 048, 072, 095, 103, 105, 119, 167, 232, 284, 300

Forest Service Response - See the response to comments 27 and 33.

32. Need to designate transportation corridors in the Forest Plan to provide for future highway improvements.

Respondents - 333

Forst Service Response - Within 2 years of the date of approval for the Final EIS and Forest Plan, we will complete a long range implementation plan for the first decade. This will include designated corridors for all existing and proposed arterial and collector roads, which the Forest Service administers, and Forest Highways.

33. Restrict vehicle access to the Forest.

Respondents - 036, 043, 163

Forest Service Response - We have rewritten the 7700 sections of each standard and guideline for each management area to clarify the vehicular access needed to obtain the stated outputs. In addition, we have clarified the reasons for restricting vehicular access. The amount of vehicular access necessary on the Forest is a direct result of the resource outputs which maximize net public benefits. During our planning effort, we developed management goals that when implemented on the ground would create certain types of resource outputs. Our philosophy in developing these goals was to determine which resources could be emphasized together and then determine the vehicular access needed to meet these resource objectives. See also the response to comment 29.

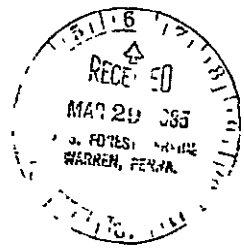
D. PUBLIC AGENCY COMMENTS ON DEIS

The full text of letters from government agencies and elected officials is reproduced in accordance with Forest Service policy. This does not impart lesser importance to comments received from non-governmental individuals and groups. These letters are included only to give the reader some idea of what other public agencies thought. The number at the top of each page is the respondents' identification number.

021

DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
WILLIAM S MOORHEAD FEDERAL BUILDING
1000 LIBERTY AVENUE, PITTSBURGH, PA 15222-4186

March 27, 1985



Mr. R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
P.O. Box 847
Warren, Pennsylvania 16365

Dear Mr. Carpenter:

As requested in your January 8, 1985 letter, the Pittsburgh District has reviewed the Allegheny National Forest Proposed Land and Resource Management Plan and Draft Environmental Impact Statement (DEIS) and offers the following comment. We view the Allegheny Reservoir as a resource of critical importance to both the Allegheny National Forest and Pittsburgh District. The long-range management of the Forest should be undertaken with the objective of protecting and enhancing the reservoir's outstanding environmental attributes.

Water quality changes in the reservoir can be perceived as the ultimate barometer of the impact of actions on the Forest. Because water quality is such a key element in influencing other reservoir values, we would like to see the Forest Service take positive steps to reduce the potential for its degradation.

The Standards and Guidelines for Management Area 6.4 (Allegheny National Recreation Area) that are defined in the Proposed Land and Resource Management Plan suggest a strengthened Forest Service review of new oil and gas drilling operations. We view this as a major positive step in the effort to protect reservoir water quality and fully endorse the Plan of Operations for mineral extraction that is described in the Management Plan. We strongly recommend that similar requirements be met by all oil and gas operations that are proposed for location within the full pool limit of the reservoir or in other areas with potentially hazardous drainage characteristics.

Your cooperation in notifying us of all proposals for mineral extraction within the full pool limit and in other areas of influence to the reservoir will also be greatly appreciated.

Sincerely,

Richard A. Rothblum

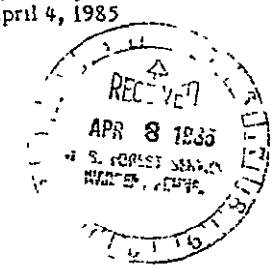
Richard A. Rothblum
Colonel, Corps of Engineers
District Engineer

Public Agency Comment

031

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

Post Office Box 2357
Harrisburg, Pennsylvania 17120
April 4, 1985



Mr. R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
Box 847
Warren, PA 16365

Dear Mr. Carpenter:

The Forest Service should be commended for producing its Land Management Plans for National Forests. These comprehensive guidelines will facilitate the decisionmaking efforts for all parties interested in resolving critical issues extant in Pennsylvania's national forests.

We are particularly pleased that your plan reaffirmed its cooperative effort with the Pennsylvania Department of Environmental Resources regarding soil and water conservation, erosion and sedimentation control and enforcement.

Whereas, a generalized standards-type plan is difficult to relate to on the interagency operations level, we anticipate continued, successful, liaison with the Forest Service in the following specific areas:

1. Erosion and sedimentation control regarding earthmoving associated with logging, recreation and agricultural activities;
2. County conservation district involvement regarding: environment, conservation, natural resources, and agriculture;
3. Watershed protection; and,
4. Agriculture protection and promotion.

We thank you for the opportunity to have input in your planning process.

Sincerely,

Paul O. Swartz, Director
Bureau of Soil and Water Conservation

Public Agency Comment

034 pg 1 of 3

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
P.O Box 2063
Harrisburg, PA 17120

April 4, 1985

RECEIVED
APR 10 1985
FOREST SERVICE
WARREN, PA.

R. Forrest Carpenter, Forest Supervisor
U.S. Department of Agriculture
Allegheny National Forest
P.O. Box 847
Warren, PA 16365

Dear Mr. Carpenter:

We have reviewed the Draft Environmental Impact Statement and Management Plan for the Allegheny National Forest. Our detailed comments are attached. Generally, the Department supports the recommended alternative (Alternative D) as representing the best balance among environmental, economic, and social interests. We are concerned however, that responsibilities within the Forest for oil and gas management need to be more clearly defined. Perhaps it is appropriate to follow up on previous discussions to develop some type of cooperative agreement clarifying the roles of the Forest Service, EPA, and the Department of Environmental Resources.

Thank you for the opportunity to review this document.

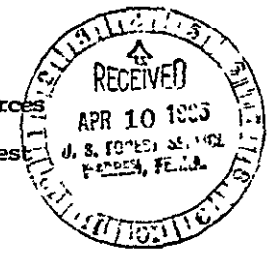
Sincerely,

Anthony J. Donatoni, Director
Secretary's Office of Policy

Attachment

Public Agency Comment

034 pg 2 of 3



Comments of the Department of Environmental Resources
Draft Environmental Impact Statement and
Proposed Management Plan - Allegheny National Forest
April 4, 1985

(1) The Forest Management Plan does not recognize the Pennsylvania Scenic Rivers Program nor those waterways which are listed in the Pennsylvania Scenic Rivers Inventory as potential candidates for designation. The following language inserted on pg. 3-20 or 3-21 of the DEIS should correct this deficiency.

> The "Pennsylvania Scenic Rivers Act", P.L. 1277, Act No. 283 as amended by Act 110, May 7, 1982, states that "many of the rivers of Pennsylvania, or sections thereof and related adjacent land areas, possess outstanding aesthetic and recreational values of present and potential benefit to the citizens of Pennsylvania." A statewide rivers inventory completed in 1975 lists the following top priority waterways for potential State Scenic River Designation:
>
> | | |
> |---|---|
> | Kinzua Creek | 34 miles |
> | Clarion River | 87 miles |
> | Bear Creek | 12 miles |
> | Tionesta Creek | 52 miles |
> | East Branch | 10 miles |
> | | 195 miles |

(2) There should be some provision for Management Area 1 in the plan to assure the future availability of aspen, primarily for wildlife purposes. One to two percent of the forest should be managed under the Management Area 1 prescription.

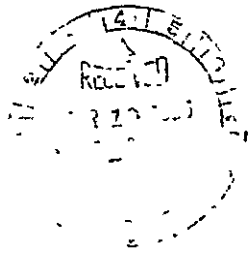
(3) The prescription for Management Area 6.1 should be altered to allow for uneven-aged management with large diameters at maturity. The present prescription calls for no cutting except for wildlife. The proposed change would allow for uneven-aged management with large diameters and over-mature trees at harvest time. Cutting cycles would be extended to at least 15-year intervals. This change would allow for some timber production from the 123,000 acres in 6.1, but at the same time preserve the aesthetic values of this area. We also do not see any need to include ORV trails in this Management Area.

034 pg 3 of 3

(4) In Management Area 6.2, there should be provision for salvage cuts during the 30 year cycle. The location of the area designated for 6.2 does not make sense to us. We would not consider the area designated for 6.2 as a high use recreation area even for low density recreation.

(5) The criteria that has been established for roadside zones is very confusing. We feel a simpler, more easily understood system could be developed.

(6) The spacial arrangement of the various Management Areas seems to have been done mechanically. For example, there are Management Area 3.0 zones along U.S. Route 6 which is a scenic highway and Management Area 6.1 zones in remote, inaccessible areas where few people will see them. More thought should be given to zoning highly visible areas as 6.1 and inaccessible areas as 3.0.

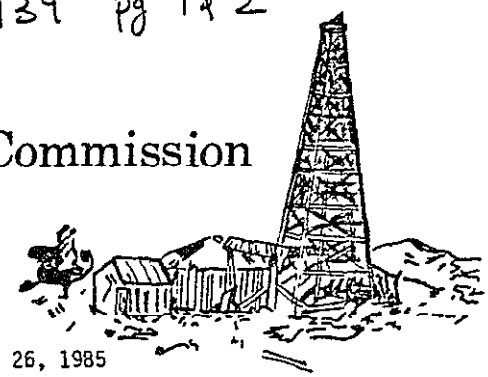


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McKean County Planning Commission

Courthouse, Smethport, PA 16749
Phone: (814) 887-5571



April 26, 1985

R. Forrest Carpenter, Supervisor
Allegheny National Forest
P.O. Box 847
Warren, PA 16365

Dear Mr. Carpenter.

After examining the Allegheny National Forest plan alternatives, the Draft Environmental Impact Statement, various land use maps, and attending numerous meetings on this subject, I would like to offer the following comments on behalf of the staff of the McKean County Planning Commission.

The preferred Alternative D provides for significant increases in both market and nonmarket benefits as compared to the current land management situation. The proposed expansion of timber operations (30% over the first decade) and recreational activities (developed and dispersed) adequately meets the predicted needs. This alternative does not presently favor one particular interest over another and we hope that this attitude prevails in the final forest plan. The multiple use concept has been provided for by the development of management practices assigned to specific land areas which are best suited for the proposed use.

We believe that Alternative D will provide the best benefits for society by assuring a sustained yield of timber, water, forage, wildlife, and recreation. The Planning Commission considers this long range planning effort as the better resolution to the land management problems addressed by the Forest Service.

However, there are two concerns that we feel should be addressed. The Draft Environmental Impact Statement, Chapter 4, page 79, states that under Alternative D about forty (40) percent of the oak type would be converted to Allegheny Hardwoods Alternative C proposes an even higher percentage (53%). The conversion of oak to Allegheny Hardwoods due to cutting, insect disease, gypsy moth defoliations, and natural regeneration problems, should be prevented or reduced whenever possible The oak is an important mast source for wildlife. Its elimination would alter the area ecology and eventually result in a monoculture of tree types. Although a limited resource, the oak is presently considered a valuable prime timber species and should be protected.

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Also, the DEIS, Chapter 4, page 26, refers to the management practice of herbicide treatment in areas where deer browsing and the existance of dense understories of fern, striped maple, and beech impede the regeneration of desired tree species (like black cherry and ash). In order to satisfy the goal of providing a nondeclining flow of timber volume over the five decade period, a treatment program should be implemented if natural regeneration does not occur. A drastic reduction in future timber volumes could greatly affect the payment-in-lieu-of taxes and 25% returns to the counties containing ANF land.

Thank you for the opportunity to review the ANF land management plan and alternatives. We feel you have done a commendable job in preparing these documents.

Sincerely,

Deborah L. Lunden

Deborah L. Lunden

DLL/glc

CC: McKean County Commissioners
Greg Bell
Kevin Abrams
Pat Evans

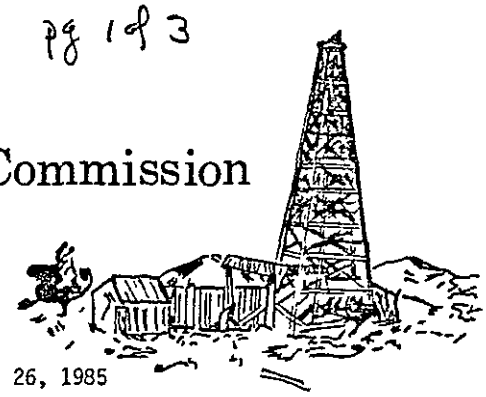


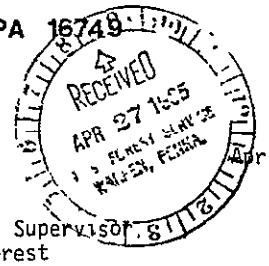
Public Agency Comment

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McKean County Planning Commission

Courthouse, Smethport, PA 16749
Phone: (814) 887-5571





April 26, 1985

R. Forrest Carpenter, Supervisor
Allegheny National Forest
P.O. Box 847
Warren, PA 16365

Dear Mr. Carpenter:

Although we have discussed the Land and Resource Management Plan for the Allegheny National Forest at County Planning Commission meetings, it has been difficult for the Commission to adopt a position on the Plan due to the length and complexity of the Planning documents. I believe it is safe to say that there is no outspoken opposition to the preferred alternative (D) from the McKean County Planning Commission.

Our tact has been to send comments directly to you from the staff. You have received comments under separate cover from Deborah Lunden of my staff, who has been closely involved with your planning process as it has evolved over the last year and a half. Despite my absence over the past 15 months, I have reviewed the Planning documents and offer the following comments.

I believe that Alternative D represents a sound planning strategy for the Forest Service in the management of the Allegheny National Forest. This alternative not only recognizes the important resource values of the Forest for a variety of uses, but also recognizes that the Forest produces products which are of crucial value to the local economy. However, should the Forest Service budget be reduced substantially limiting the ability of the Forest Service to market timber sales and provide new recreational facilities, the desirable results of Alternative D cannot be achieved. This would be very harmful to this area.

My specific comments are as follows

Proposed Land and Resource Management Plan -

a) pp 2-4. We have always agreed that the demand for developed recreation is severly constrained by the lack of developed facilities;

b) pp 3-2 and 3-3. It has long been our contention that the Reservoir can accomodate more modern campgrounds and boating facilities. This can



140 pg 2 of 3

be accomplished without turning the Reservoir shore into some sort of overdeveloped and unsightly tourist "trap." A rustic resort and other facilities are good ideas, but should be restricted to certain specific areas, rather than being scattered around the shoreline of the entire Reservoir.

Draft Environmental Impact Statement

a) pp 2-33. I agree with plans for new campgrounds, boat launches, and a resort. As specified in the EIS, all must be water related. Non-water related facilities are used below capacity at present.

b) pp 2-34, 4-35. Habitat improvement is very important, especially in the Reservoir. It is gratifying to see that structures are planned for the Reservoir. The decline in the quality of the fishing experience over the last several years has had a severe effect on what was once the outstanding fishing resource in the entire northeastern U.S.A. Habitat improvement appears to be a key in the "return" of the valuable fishing resource.

c) pp 2-39. Regardless of the strength of the demand for oil and gas, the Forest Service should be staffed well enough that it can closely monitor and regulate oil and gas operations. Oil and gas production is crucial to our economy, but is seldom compatible with any kind of recreation experience.

d) pp 4-15. Despite some concerns of the timber industry, it is clear that saw timber production will (should) increase for several decades with the maturity of trees in many areas of the Forest. This timber should and must be harvested, regardless of the Forest Service budget.

e) pp 4-99. Although often underestimated, the number of jobs associated with the Forest (and with Alternative D) are very important to the local and regional economy.

Draft Environmental Impact Statement - Appendix B

a) pp B-93. I don't believe we can be seriously faulted for making poor projections; our only fault is lack of information. Projections given were generally secured from the State of Pennsylvania, where some erroneous assumptions were used. McKean County's population has now fallen below 50,000. Unless existing conditions change, McKean's population is unlikely to reach 50,000 again before the end of the century.

140 pg 393

Thank you for the opportunity to comment on the Land and Resource Management Plan. We look forward to continued cooperation in planning efforts between the U.S. Forest Service and the McKean County Planning Commission.

Sincerely,

Terry L. Hess

Terry L. Hess
Director

TLH/glc
CC: McKean County Commissioners
Greg Bell
Kevin Abrams
Pat Evans



057

United States Department of Agriculture
Soil Conservation Service
228 Walnut Street, Room 850
Box 985 Federal Square Station
Harrisburg, Pennsylvania 17108-0985

April 16, 1985

Mr. R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
P.O. Box 847
Warren, PA 16365

RECEIVED
APR 20 1985

Dear Mr. Carpenter:

This letter provides a written comment on the proposed management plan for the Allegheny National Forest.

Our particular comment deals with Section 2500, Water and Soil Management. The guidelines on soil and water conservation appear to adequately address the maintenance of soil productivity and should enhance or maintain water quality.

We are glad to see soils information being used in planning forest management practices.

Sincerely,

William Hunt, Acting
James H. Olson
State Conservationist

The Soil Conservation Service is an agency of the United States Department of Agriculture

★ U.S. Government Printing Office: 1983—426-839/1578

Public Agency Comment

107 pg 1 of 2

COMMISSIONERS OF WARREN COUNTY

DAVID K. RICE, V.M.D., Chairman
RAYMOND A. MARTI
TIMOTHY E. GREENLUND

WILLIAM R. MERVINE
Solicitor
GEORGIANNA SHEA
Chief Clerk
BARBARA P. WALKER
Registrar

WARREN, PENNSYLVANIA 16365
Telephone 723-7550



April 23, 1985.

Sheffield Ranger Station,
Allegheny National Forest,
Sheffield, PA 16347.

RE: Draft Environmental Impact Statement

ATT: James Schuler

Dear Sir:

After studying the complete copies of the DEIS, attending several informational meetings, and discussing the DEIS with numerous constituents, this office would recommend that Alternative D would be the preferred plan for the future development of the Allegheny National Forest.

Sincerely,

WARREN COUNTY COMMISSIONERS

D. K. Rice, V.M.D.,
Chairman.

DKR:eh

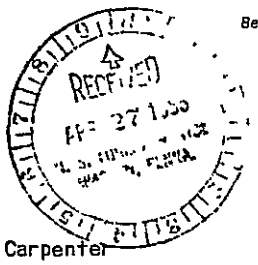
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___REC ___ _____
___ _____ ___ _____

Public Agency Comment

158 pg 1 of 3

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
Bureau of Fisheries and Engineering
450 Robinson Lane
Bellefonte PA 16823 9616

Division of Fisheries
(814) 359 5154
Fisheries Management Section
(814) 359 5110
Trout Production Section
(814) 359 5141



April 26, 1985

R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
P. O. Box 847
Warren, PA 16365

Dear Mr. Carpenter:

This is the Pennsylvania Fish Commission's comment on the Allegheny National Forest Management Plan and Draft Environmental Impact Statement. We appreciate the opportunity to review these documents and provide comment.

In general, the fisheries portion of the plan is somewhat simplified but the overall forest management plan alternative selected will, with the increased involvement of the Pennsylvania Fish Commission in fishery management on the forest, permit a continuing high quality recreational fishery.

We would like to see the portion of the Plan relating to rare, endangered and threatened species of concern strengthened to include key habitat acquisition, site specific occurrence information and the opportunity for additional commentary from the PFC relative to concerns for preservation and enhancement of habitat for those species.

We have the following specific comments and questions:

DEIS

Alternatives A-E

Other than habitat improvement, which other fisheries management techniques are involved in the level of activity depending on the alternative? Little mention was made of stocking alternatives or the use of special regulations such as catch-and-release, delayed harvest, etc. which could, depending on the degree of implementation, reflect various alternatives.

4-35

Suggest bank stabilization work be added to fish habitat improvement activities.

Public Agency Comment

4-26 and 4-42

Relative to the concern for the impact of increased fishing pressure on native brook trout fisheries, the recent increase in the minimum size limit (now seven inches) for trout was specifically done with that type of fisheries in mind.

4-88

Specific fishery management practices could include special regulations for either social or biological reasons or a combination of the two.

4-93

There is uncertainty as to how the level of angling activity for coldwater or warmwater fisheries would change depending on the alternative chosen. How were the use projections derived? Were changes in fisheries management (special regulations, stocking, etc.) taken into account? Example, even with a decrease in the amount of stockable water, by adjusting the stocking rates, frequency, etc. on the remaining water, overall use might even increase. Special regulation areas, including refuge areas, can also contribute to changes in angling patterns.

PLAN

4-26, Para. 6

Need stronger language on the need for energy dissipators.

4-32, Para. 3

A misnomer--these five streams are actually "Wilderness Trout Streams" by PFC definition and are not necessarily wild trout waters (at least not wild trout by PFC trout biomass standards).

4-32 and 4-36

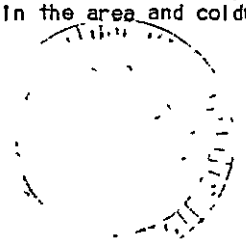
Is the Forest Service experiencing any problems with stockings by sportsmen, including those groups in the PFC's Cooperative Nursery Program?

4-42

Need clarification on PFC signs/posters meeting Forest Service standards.

4-56, 4-71, 4-86, and 4-100

We would appreciate the opportunity to review the listing of waters proposed for intentional beaver management. Even though "warmwater" streams are to be targeted to minimize the impact with salmonids, there aren't too many warmwater streams in the area and coldwater streams will be involved.



4-128

Management Area 7. It appears site selection was made prior to enactment of legislation creating the N.R.A. under Alternative D, a proposal for resort development at 22 Sugar Bay is indicated. This development is actually across the bay from this N.R.A. and appears to be in direct conflict with the purpose of an N.R.A. (proposed development is on Table 4-3, Page 4-9 of the DEIS).

Site 21 at the Hopkins Farm. Is there a need for this site? There are three private campgrounds and a Corps campground within five miles of the proposed site.

Again, thank you for the opportunity to comment.

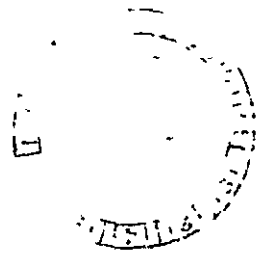
Sincerely yours,

Delano R. Graff

Delano R. Graff, Chief
Division of Fisheries

jlw

cc: Executive Director
Director, Bureau of Fisheries & Engineering
Chief, Fisheries Management Section
Chief, Fisheries Environmental Services Section



161 pg 1 of 4

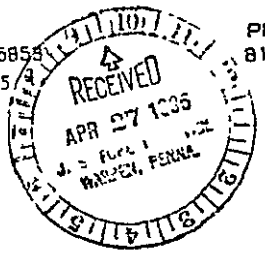
COOPERATIVE EXTENSION SERVICE
THE PENNSYLVANIA STATE UNIVERSITY

Elk County
Extension Service

Courthouse
Ridgway, Pennsylvania 15853

Phone
814 776 1161

April 26, 1985



Mr R. Forrest Carpenter, Forest Supervisor
Allegheny National Forest
P O Box 847
Warren, PA 16365

Dear Mr. Carpenter

As a professional forester of 34 years experience in strip mine reclamation, pulpwood procurement, industrial forest management, and forest resource extension educational work, I appreciate the opportunity of commenting on the land and resource management alternatives proposed for the Allegheny National Forest.

First off, I believe your staff is to be commended for their persistence and dedication in addressing the demands of the many interest groups that look to the complex and extensive resource mix the ANF has to offer. While some of those interests are quite narrow in scope and depth, I have tried to direct my following suggestions and comments towards the broader well-being of the region.

Preferred Alternative

Although the benefits attributal to Alternative D would appear to justify your planning team's selection of it as the best response to the six management problems developed thru the planning process, it is my contention that in light of recent Wilderness and National Recreation Area legislation a modified Alternative C best meets the standard from your Eastern Regional Guide that sets forest-wide guidelines to "identify forest....opportunities that will help individuals and local communities enhance their self-sufficiency and their feeling of social well being" (PL&RMP, p. 4-6).

I believe it is very necessary to follow a management policy that emphasizes the production of "priced market benefits" (DEIS, p viii) of Alternative C for the following reasons·

a) Maximization of payments to townships and local school districts to offset lessening federal and state support (App. B, p B-232-3)

b) The projected timber production of "slightly increased above current levels" (DEIS, p. 2-33) of Alternative D does not allow the region's economy to fully benefit from the much greater volume that could be realized under a management policy like Alternative C.

c) As pointed out in your table B-21 (App B, p. 101), the number of jobs resulting from an Alternative C management philosophy would produce 11% more jobs than does your preferred Alternative D What is not pointed out is the more desirable nature of jobs originating in the forest products sector over those originating in the recreation/tourism sector - they will be higher paying, permanent, full time, skill demanding

The Pennsylvania State University, the U S Department of Agriculture and the Elk County Extension Service Cooperating
Penn State is an affirmative action equal opportunity university

d) While you have correctly assumed that the wood products industry of the region can use all the sawtimber volumes the ANF would care to produce (under realistic marketing policies), I believe it is not practical to expect the ANF to produce the volumes you have projected under either Alternative C or D for the reasons listed below; consequently it is necessary to establish a management policy that would minimize restraints on timber production as proposed in Alternative C:

1) it is not yet known whether the deer population levels currently agreed on between the Forest Service and the Pa. Game Commission will allow for extensive and at-will natural regeneration of the desirable native hardwood timber species

2) the intensity and extent of forest management for intensive timber production will very probably have to be further compromised to meet the continuing demands and pressures of wildlife, recreation, environmental, and aesthetic interests.

3) if the oak types are to be maintained at current acreage levels, timber production from them may have to be reduced or deferred until needed research develops the appropriate silvicultural practices that will allow us to maintain and perpetuate these stands.

e) While the present net value of Alternative D is only 1.2 million dollars less than Alternative C (DEIS, p. 2-32 and 35), I believe the difference is substantially greater because of the higher proportion of less positive non-market benefits attributable to dispersed, semi-primitive, and wilderness recreation, and wildlife habitat associated with Alternative D.

Recommended Changes to Alternative C

I. With the legislative establishment of the Hickory Creek Wilderness Area and the Allegheny National Recreational Areas, recreational activities under Alternatives C can be now grouped as follows using the terminology of Table 2-10 (DEIS, p. 2-44-45)(PL&RMP, p. 4-154).

Type of Recreation	Mngt. Area	M Acres	
Dispersed - roaded recreation environment, roads periodically closed	1	0	
	2	9	
	3	426	
	4	11	
			446
Semi-Primitive and Wilderness - non-motorized recreation opportunities, all or most roads closed to public use	6.2	1	
	6 3	1	
	6.4	23	
	9 2	9	
			34

It is my contention that if only a part of those water corridor and intensive recreation facing slopes designated 6.1 were combined with the 34,000 acres of semi-primitive and wilderness management areas listed above this would

easily meet your goal of 49,000 acres of semi-primitive, non-motorized dispersed recreation acreage designated as 6.1 for Alternative C (DEIS, p. 244-45). Therefore, it is my recommendation that the amount and number of stands designated as 6.1 be greatly reduced and limited to only those very aesthetically critical areas directly impacting the proposed developed recreation management areas and major water corridor facing slopes.

II. Except in the case of Alternative A, the conversion of "high site oak to Allegheny hardwoods through natural regeneration" is called for in varying amounts, depending on the alternative (DEIS, p. 4-110).

I am strongly opposed to the conversion of any oak stands to any other forest type, irregardless of site quality and intended use, for the following reasons:

a) It is important to maintain as diverse a mixture of forest trees and their related vegetation as possible because of the impact major insect and disease outbreaks could have on a forest resource base committed to a limited variety of tree species.

b) The oak stands provide a very different and diverse wildlife habitat from that of the Allegheny Plateau Hardwood type that should enhance the diversity and quality of our wildlife populations.

c) While oak is not a major saw timber component on the ANF, the demand for oak veneer and lumber has and will continue to be consistantly strong and high valued in comparison to our other hardwood species, even our much vaunted black cherry. Consequently, what little oak veneer and sawtimber we do produce on the ANF is a valuable and stabalizing factor to our region's forest products industry.

d) In keeping with the continually increasing aesthetic concerns of the general public, the oak type offers a different 'vegetative picture' in connection with the public's various recreational experiences and activities on the ANF.

Endorsements

While there are many aspects of the management alternatives that I am very much in agreement with, I would like to single out the following as being of basic and far reaching importance:

I. The establishment of a continuing herbicide spray program to control undesirable grass, fern, and woody understory conditions (DEIS, p. 4-27).

a) in the case of sustained yield forestry, research has proven the absolute necessity of such control work if forest management and subsequent regeneration of our forests is to take place.

b) in the case of wildlife management (game and non-game) and for an ecological balance of the total plant community, it is just as necessary and important to allow other desirable understory species to prosper.

Because of excessive past deer populations and the unproven results of the proposed future deer population levels, the use

of such a herbicide program is paramount to a balanced land and resource management plan on the ANF.

II. If we are to produce the material needed by the county's wood products industries for efficient and competitive trade, domestically and overseas, our forest management practices for our Allegheny Plateau Hardwoods must be based on intensive, accelerated, even-aged management. Any efforts to compromise the research findings along these lines would work to the country's and the industry's disadvantage.

III. Because it emphasizes priced market benefits and high levels of income to the U.S. Treasury, the townships and school districts of Warren, McKean, Forest and Elk Counties, and the larger region's economy, I believe Alternative C with the modifications I have suggested is the most appropriate type of philosophical approach to managing the land and resources of the ANF.

IV. While recreational uses of forests do create problems and necessitate compromise in managing them for wood products, the strong emphasis of Alternative C on developed and dispersed recreational opportunities is the best way of addressing a large portion of the recreational needs of the American public.

V. The adoption of a hunting and fishing stamp in Alternative C (DEIS, p. 2-31) would be an excellent idea for the following reasons - particularly if separate stamps were issued for hunting and fishing:

a) it would be useful in measuring or indexing such recreational uses and value on the ANF.

b) it would supplement income to the federal government, townships, and school districts.

c) it would help direct proper emphasis on habitat improvement.

d) it would help underwrite the costs of such habitat work by those demanding such use of the ANF

Thank you for your consideration of these remarks; should you have any questions concerning them, please do not hesitate to contact me.

Yours truly,

Sandy Cochran

Roe S. Cochran
Area Forest Resource Agent

RSC/sir

Public Agency Comment

162

ELK COUNTY
PLANNING COMMISSION



COURT HOUSE

RIDGWAY, PA 15853

PHONE (814) 776-1161 – Ex 35
DIRECTOR KEVIN D ABRAMS

RECEIVED
APR 29 1985

April 26, 1985

Allegheny National Forest
Box 847
Warren, PA 16365

Gentlemen:

I wish to take this opportunity to submit my comments on the Allegheny National Forest Draft Land Use Plan Update. First, I would like to congratulate the ANF staff on presenting an excellent document. It is very evident that the ANF staff devoted numerous hours to compiling valuable information and provided the public with a wide variety of planning strategies.

As a result, I have no specific comments on any particular component of the plan. I would, however, request that the ANF staff refrain from regarding the input period as a popularity contest. To put it another way, I trust that the ANF staff recognizes the potential of being flooded with letters from special interest groups and will consider this situation if it should arise.

In addition, I think Alternative D is probably the best Alternative. My reason is that I feel that ANF offers a variety of uses, all of which can be implemented with careful planning and management. I feel that Alternative D provides the best format in implementing all uses.

In closing, I again extend my congratulations on a well done document.

Thank you very much for the opportunity to present my views.

Sincerely,

ELK COUNTY PLANNING COMMISSION

K. D. Abrams

KDA:aw

Kevin D. Abrams
Director

cc: Elk County Board
of Commissioners

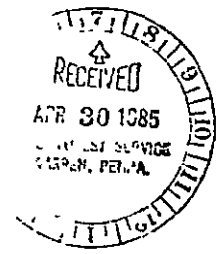
Public Agency Comment

310 pg 1 of 2

Corydon Township

BOARD OF SUPERVISORS
McKEAN COUNTY
2474 W WASHINGTON ST
BRADFORD PA 16701

April 29, 1985



Forrest Carpenter, Forest Supervisor
Allegheny National Forest
P.O. Box 847
Warren, Pa. 16365

Dear Supervisor Carpenter:

The Board of Supervisors of Corydon Township, McKean County, Pennsylvania wish to thank the officials of the Allegheny National Forest for their efforts in informing the public of and inviting comment on the Draft Environmental Impact Statement and the *Proposed Land and Resource Management Plan for the Allegheny National Forest*. We are particularly grateful to Bradford District Ranger Jim Higgins for information provided at our township and county meetings.

In general, we offer no opposition to the selection of Alternative D as the Preferred Alternative by the Forest Service.

In particular, we offer comment only on the Draft Environmental Impact Statement, Chapter 3 - Affected Environment, Section C - Social and Economic Environment, page 3-22, Plans and Programs of Other Agencies, paragraph 2. We refer to the payments made by the federal government to the four counties encompassing the Allegheny National Forest to offset the absence of tax revenues from federally owned land within the counties.

Of particular concern to us is the payment, originating from 25% of the gross receipts on national lands, which is paid to the counties to be used for public schools and roads. As representatives of a township in which 90% of the land is tax-exempt National Forest land we have a special, perhaps even unique, interest in the plans and policies of the Forest Service in this area.

While recognizing that the payment structure is determined by federal legislation and that its impact on the social and economic environment is not peculiar to, nor limited to, the Land and Resource Management Plan for the Allegheny National Forest, we hope that we may, nevertheless, properly use this forum to offer comment on this aspect of the environmental impact.

In view of Corydon Township's situation, which may be unique in that such a staggering portion of its land is tax-exempt National Forest land, we offer the following comment.

310 pg 2 of 2

Corydon Township
BOARD OF SUPERVISORS
McKEAN COUNTY
2474 W WASHINGTON ST
BRADFORD PA 16701

April 29, 1985

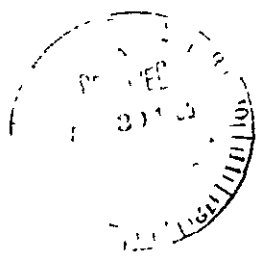
Forrest Carpenter, Forest Supervisor
Allegheny National Forest

The Board of Supervisors of Corydon Township would appreciate the opportunity to become involved in any proposal to change the current payment structure under which 25% of the gross receipts from National Forest System lands are distributed to the counties in which the lands are located. At best, we would welcome direct involvement with the formulation of any such change proposal. At least, we would appreciate notice as early as possible in the development stages, of any such change proposal.

Thank you for the opportunity to comment.

Sincerely,
CORYDON TOWNSHIP SUPERVISORS

Nancy C. Swanson
Supervisor/Secretary



Public Agency Comment

333 pg 1 of 2

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
HARRISBURG PENNSYLVANIA 17120

OFFICE OF
SECRETARY OF TRANSPORTATION

RECEIVED
MAY 1 1985
U. S. FOREST SERVICE
WARREN, PENNA.

April 25, 1985

Allegheny National Forest
Proposed Land and Resource Management Plan and DEIS

Mr. R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
Post Office Box 847
Warren, PA 16365

Dear Mr. Carpenter:

Thank you for the opportunity to review and comment on the Proposed Management Plan and the Draft Environmental Impact Statement (DEIS) for the Allegheny National Forest. The focus of our review was on the transportation aspects of the proposed plan with particular emphasis on the existing state highway system. We offer the following general comments on the plan and the DEIS:

1. Each document recognizes the fact that there are over 400 miles of state highways within or adjacent to the National Forest that do not meet modern design and safety criteria. Also, they recognize that highways or roads play an important rule in the fulfillment of the management objectives of the plan. However, the state highway related needs of the Forest, the anticipated impacts of the Forest management activities on existing state highways and planning to satisfy the state highway needs are not well-defined.

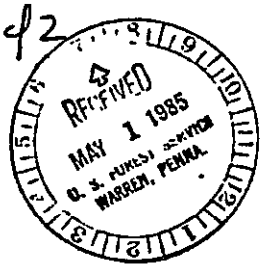
   In recent years, the Department and the Forest Service have worked together to address our transportation needs for both the Forest Highways and Public Lands Highways Programs. We will continue to work with you to address these needs so that both of our agencies and the motoring public may benefit.

   In order to enable both the Pennsylvania Department of Transportation and the U.S. Forest Service to plan their respective activities in the National Forest, we request that the Forest-related state highway needs and impacts be assessed in greater detail and preliminary plans be developed for making the necessary highway improvements.

2. A major portion of our highway improvement program is Federally-aided and we must follow the Federal Highway Administration's regulations for highway project development. One Federal law in particular, Section 4(f) of the Federal Aid Highway Act of 1968 protects publicly owned land from a public park, recreation area or wildlife and waterfowl refuge. In

-more-

333 pg 242



(Allegheny National Forest)

complying with Section 4(f), we are required to prepare exhaustive justification and documentation for any highway improvement project involving these lands. It has been our experience since the adoption of this law that most of the involvements with these lands are minor in nature and result in little or no adverse impact on the property or its uses. In most cases, the official(s) having jurisdiction over the property agree(s) that the highway project enhances the property and its uses.

We are concerned that the future improvements of the state highways within the Allegheny National Forest are likely to result in Section 4(f) involvements and unnecessary work for our respective agencies, unless measures are taken during the development of the Land and Resource Management Plan to provide for highway improvements. With the proper designation of transportation corridors encompassing the existing highway right-of-way and the additional land area needed for improvements in the management plan, we feel we can avoid these Section 4(f) involvements. We request your consideration of designating transportation corridors along the existing state highways within the National Forest to provide for future highway improvements.

We welcome the opportunity to meet with you to discuss our concerns. Please contact me or Mr. Fred W. Bowser, Director, Bureau of Design at 717-787-3310 to arrange meeting at your convenience.

Very truly yours,

David C. Sims

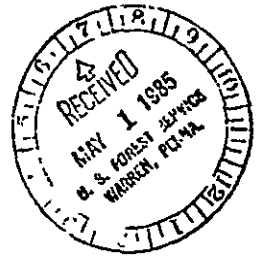
David C. Sims, P.E.
Deputy Secretary for
Highway Administration

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
FIELD SERVICE

April 29th, 1985

336 pg 1 of 3

TO . Forest Supervisor
Allegheny National Forest
222 Liberty Street
P.O.Box 847
Warren, Penna. 16365



FROM

• District Game Protector
John P. Dzemyan
RD#1 Bloomster Hollow
Smethport, Penna. 16749

Dear Sirs;

Thank you for supplying me we the extensive amount of information you compiled on the proposed changes in the A.N.F Forest. I'd like to be more familiar with the actual management of the Forest to make better comments but time is run out so I base my comments on what I've read and also the many days I've enjoyed throughout the Forest.

I've divided my comments into the same four catagories you have.

1.) WILDLIFE HABITAT:

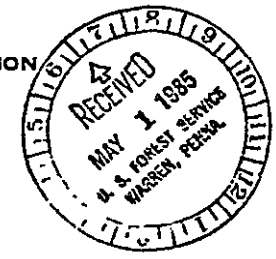
So much emphasis is based on one species of wildlife, the deer, and so much wildlife habitat is at stake over proper management of the deer herd that I must comment on it first. Please keep up the present effort to REDUCE the deer herd to its proper balance with the rest of the [redacted] flora and fauna in the forest. A proper balance is one that will permit the native trees, shrubs, vines and wildflowers grow, reproduce and survive wether it be blackberry briers in a clearcut or hobblebush and yew under a mature forest canopy. By balancing the deer herd to th at level the forest will once again support the widest varity of trees and shrubs (flowers, vines, etc) which would improve the habitat not only for deer but for all species of wildlife living in the Forest. Being a Game Protector I know how tough it is to convince the public and the hunter of this, but it must be done.

Other comments on wildlife habitat I like to make are: do not cut ANY den trees. In the past so many poor quality timber trees were cut to make room for high quality trees that very few den trees are left, so none should further be cut. Sounds radical but when you consider how few their are its not askin much. I've yet to see any impressive improvements in timber growth or production due to the removal of den trees either.

One more comment on wildlife habitat, in some areas where commercial timber operations are not profitable enough to conduct with their benefits to a varity of habitat, some areas should be cut just for the sake of preserving the varied habitat, such as aspen stands. Not just haphazardly or as a token but under the good wildlife management techniques that have been proven over the years. Along with this the planting of conifer's, both native and spruces would help the Forest and wildlife recover from the cut and burns of the past, which has servely reduced its evergreen cover.

Public Agency Comment

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
FIELD SERVICE



336 pg 243

Subject: Allegheny National Forest Plans

2.) TIMBER MANAGEMENT:

This is quite an important issue to as it affects a great amount of the Forest. Number one comment I'd like to make is that in all the timber operations efforts must be taken to insure, to maintain and improve the varity of trees and shrubs species on the forest. The over emphasis on certain tree species (like the cherry) is going to result in disaster no different than the same type of disaster ~~disastrous~~ from the same type of over emphasis that was placed on the deer herd for the past fifty years. Efforts to change oak stands or aspen stands to northern hardwood cherry stands would lower the total natural resources both for human use and wildlife use of the forest. Varity and diversity, thats conservation and thats the National Forest. Too much importance on one type of flora or fauna over others , from any viewpoint, results in both the loss of resources and the benefits of the Forest.

As for increasing timber harvests at the present. If carefully done and at a moderate pace it could very well improve the present status of both habitat for wildlife and also the future timber resource. So slighty increasing the timber harvest should be a benefit.

Logging roads. The person who patents a way to profitably harvest timber with out the need for building more of these dirt highways through the Forest will be a great conservationist as well as a rich one. Efforts to lesson the building of all these bare dirt deserts for both timber and wildlife need taken. All these roads add up to a tremendous loss of soil, timber land and wildlife habitat. I'd like to see the National Forest a leader in how to run a forest with less of them. Where old closed roads exist they should be kept closed to all motor vehicles and new roads should be gated and kept closed to, except of course for logging & management needs. Enough motorized access is alreay available to the Forest and no need to encourage more is necessary.

3.) Dispersed recreation:

Types of recreation should stick to those that promote conservation such as hiking, hunting, birdwatching, fishing, tent camping, nature trails, enviornmental education, sking,(cross country) skating, back-packing, picnic areas and the like. Motor vehicle recreation should not be promoted nor encouraged in the Forest. If possible, it should be eliminated. It may be a popular sport but it is in no way compatible with conservation of our natural resources. The Forest should no more promote this sport, be it summer or winter, than it does promote or provide basketball courts, tennis courts, baseball or football fields on its lands. I realize that existing snowmobile trails will stay along with some orv trails, and that since their creation business cater to and now depend on the money from these sports. Future programs in the forest should not increase this form of recreatio due to its very anti-conservation nature.

4.) Developed Recreation

On this issue let me firmly state that the National Forest should not

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION
FIELD SERVICE

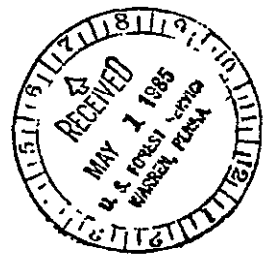
April 29, 1985 cont.

Subject: ANF Plans.

336 pg 3 of 3

should not encourage the developement of large campgrounds and rustic resorts. on public lands. The point of having the private sector involved does not bother me. I don't want to see the private or the public National Forest develope such beautiful areas such as Sugar Bay into a tourist resort. As for existing campground areas or recreation areas such as Kiasutha, letting the private sector run these areas does not bother me as long as they ~~xxxxxxxxx~~ maintain the outdoor quality and stick to the basic outdoor needs and not turn to providing Pacman computer games on the site to make money, or other similiar endevors. If the National Forest people believe in such a large developement I suggest they take a site that is presently an enviornmental mess, like some of the private holdings in the forest that are trailer camps nearly bumper to bumper, and develope on of these sites into one whwere not only hunters could stay but year round outdoor enthusiats could stay in a rustic atmosphere that would be an improvement over the sites former set up of outhouses, eyesore camps, hacked up woods, etc. This type of development is what the Forest should encourage the private sector into on private land where the enviornment is in poor shape. Not on land that is presently growing spring beauties and trilliums, supporting trees for timber and wildlife, grassy openings for wildlife, etc. To develope an area like this into a large campground etc would be a mistake and a shame. I'd much rather see you take a portion of Ridgeway or Johnsonburg along the river where its rn down factories and abandoned factory yards and put your development there. Or encourage the private sector to put it there. As for some other camping areas that already exist in the forest, if need be , add a few more, but keep them small and primitive.

Once more , thanks for reading my comments and my final one is to encourage the Allegheny National Forest Service to expand and improve its outdoor education (environmental ed, conservation ed.) programs to all its users, be they hunters, campers, loggers. drillers , etc. Put more effort into this program, full time employees whose desire and duties are to get the users of the Forest more interested in conservation and also to do more such outdoor education with the people that live in and around the Forest. Showing them that good conservation practices are the answer to improving life on this planet will make the Forest a better place, and make managing the Forest an even better job.



Sincerely,

John P. Dzemyan

Public Agency Comment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

RECEIVED
MAY 2 1985
U. S. FOREST SERVICE
WARREN, PENNA.

APR 29 '85

Mr. R. Forrest Carpenter, Forest Supervisor
Allegheny National Forest
P.O. Box 847
Warren, Pennsylvania 16365

337 Pg 1 of 10

Dear Mr. Carpenter:

The Regional staff has reviewed the Proposed Land Resource Management Plan for the Allegheny National Forest and its associated Draft Environmental Impact Statement (EIS). The Draft EIS contains a comprehensive description of the Forest's history. We were also pleased with the description of the analytical approach described in the Draft EIS. However, our review identified several areas of concern. These issues are included in the enclosed Technical Comments. These concerns have lead to a rating of EC-2 for the Draft EIS. This ranking, which is described on the enclosed Rating System Criteria, means that we have "environmental concerns" due to "insufficient information."

The areas of concern that we have identified relate to potential water pollution problems arising from watershed and forest management, timbering practices, oil and gas development, and potential coal mining. We also believe that several alternatives have not been fully considered. In addition, we have some general comments that are included in the Technical Comments.

We feel that our comments can lead to a positive discussion regarding the implementation of mitigation measures to limit adverse impacts. EPA's review procedures encourage a meeting for any EIS that is rated EC-2. The review coordinator, Bob Davis, will be available to meet with your staff at a mutually acceptable date. He can be reached on FTS at 597-8327 or 597-7828.

Thank you for the opportunity to comment on the documents.

Sincerely,

Richard V. Pepino

Richard V. Pepino, Chief
NEPA Compliance Section

Enclosures

Public Agency Comment

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RATING SYSTEM CRITERIA.

a. Rating the Environmental Impact of the Action.

(1) LO (Lack of Objections). The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.

(2) EC (Environmental Concerns). The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.

(3) EO (Environmental Objections). The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental objections can include situations:

(a) Where an action has the potential to violate a national environmental standard;

(b) Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;

(c) Where there is a violation of an EPA policy declaration;

(d) Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or

(e) Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.

(4) EU (Environmentally Unsatisfactory). The review has identified adverse environmental impacts that are of sufficient magnitude that the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:

(a) It is highly probable that a violation of national environmental standards will occur;

(b) There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or

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(c) The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or policies or for some other reason.

b. Adequacy of the Impact Statement.

(1) "1" (Adequate). The draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

(2) "2" (Insufficient Information). The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS which could reduce the environmental impacts of the action. The inadequate information, data, analyses, or discussion should be included in the final EIS.

(3) "3" (Inadequate). The draft EIS does not adequately assess the potentially significant environmental impacts of the action, or the reviewer has identified new, reasonably available, alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS which should be analyzed in order to reduce the potentially significant environmental impacts. The inadequate information, data, analyses, or discussions are of such a magnitude that they require full public review at a draft stage. This rating constitutes a finding that the draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus must be formally revised and made available for public comment in a supplemental or revised draft EIS.

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TECHNICAL COMMENTS

Our technical comments fall into the categories listed below. We are concerned that the Proposed Plan, if implemented, may result in potential air and water quality impacts. Timbering pressures along with the oil and gas developments, as described in the Proposed Plan, may result in significant adverse environmental impacts which cannot be controlled with the proposed mitigation plans. We also feel that some additional analyses of alternatives may bring further options to light that could alleviate our concerns. Our general comments are non-categorical and are included for your consideration.

We urge the Forest Service to keep in mind that our perspectives in planning are that the terrestrial ecosystem is wholly dependent upon the existing geology and soils of the area. While it is our opinion that the Forest Service has gathered much of this information, we think it has not been fully utilized in developing the alternatives. Our comments below are developed from this perception and attempt to present our concerns regarding the long term planning perspective.

Our review includes the following comment categories:

- Watershed Management and Water Quality
- Timbering and Forest Management
- Oil & Gas and Mining
- Alternatives and Analyses
- General

Watershed Management and Water Quality

It is our view that planning for such large areas the size of the Allegheny National Forest should consider the Forest as a collection of watersheds and that planning should start with geological and pedological foundations upon which the terrestrial values are dependent. It is our opinion that in the past mistakes have been made because geology and soils were not properly understood. For example, sediment and acid mine drainage form Pennsylvania's coal fields have degraded hundreds of miles of streams simply because when the coal fields were improperly opened. We now recognize that physically disturbing stable geological systems which contain pyritic minerals results in long term environmental problems which are overwhelming both technologically and economically.

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With all the current and anticipated oil and gas development, we think the Forest Service should continue to gather detailed geological information to aid in long term planning. For example, the routine of drilling for gas, can be related to the Forest's stratigraphy which has tremendous value in planning. This geological information can supplement the soils information (sources of which are documented on B-13 ff) and can be carried over to watershed planning practices. This accumulated information may be used on a case-by-case basis for timbering, oil & gas exploration, and mining, whichever is the most appropriate.

The Forest Service should either have in hand or be developing an inventory of the streams that have previously been degraded by these activities and undertake the process of planning for restoration and reclamation. These inventories should help both to improve stream quality for degraded streams, and to protect other streams from similar fate in the future.

We see on pages 3-13 of the Proposed Plan that soils are a part of the research needs analysis, but it seems to be heavily oriented towards improvement of timber resources and too lightly emphasizing ancillary forest resources such as water quality.

The glossary contains definitions for perennial streams and watersheds, but does not define intermittent streams. We cannot find where the definition for streams is cross referenced to stream flow characteristics. This needs to be done and complemented by other considerations. These considerations fall under the general category of "stream histology", in which the biological and physical conditions of the bed and banks, stream gradient, as well as flow characteristics and aspect, etc., are the determining factors. We feel the Final EIS and Proposed Plan should detail how these factors will be programmed into specific plans for management because of the potential for pollution from timbering, oil & gas, and mineral, along with other developments.

These "histological" characteristics should also be the guidance for distinguishing between perennial and intermittent streams. Frequently, timbering operations are allowed to cross what serves as an intermittent or ephemeral stream, but which may fall into a very different category when other parameters are applied. Traditional definitions are slowly evolving from using only stream flow characteristics towards the broad use of biological characteristics, eventually recognizing the ecological integration of watersheds regardless of individual runoff characteristics. We feel the Forest Service should anticipate this evolution and project their planning process accordingly.

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This definition will be a great help in implementing the very good filterstrip/shadestrip criteria contained in the Proposed Plan. In addition, this should be pegged to the definition of riparian areas so that erosive runoff is minimized. While we have used the "75 foot rule" for such definitions in the past, we feel your 50 feet plus two feet/slope % is very good and may be applicable over a wider area than the Forest. However, we note that on page 4-65 of the Proposed Plan some exceptions are made. Such exceptions are difficult to define and should be very tightly controlled. In addition, the Proposed Plan allows for some activities within the 50 foot zone (e.g., road construction on page 4-25). These also should not be tolerated until all alternatives have been exhausted.

Our review noted very little regarding the bogs that may exist within the Forest. Mention is made of those bogs that are under protection, but many others may exist that deserve attention. The EIS process should either include an inventory of wetland areas or describe a classification system that will be used on a case-by-case basis. It is important in the planning process to understand the function of wetlands. While many streams often evolve from geologic formations that lend little (if any) buffering capacity, others either arise out of, or immediately pass through, wetland systems. These streams, and some wetlands, thrive in pH systems of the 4.5 to 5.5 range. It is also true that immediately downstream from such systems, fish populations are sparse, if in existence at all, but the benthic communities thrive and form the basis for downstream ecosystems that include thriving fish populations. In addition, the low pH waters emanating from wetlands contribute to the dissolved solids that are also essential to the downstream community. For these reasons, the headwaters' ecosystems should be protected.

Head-of-hollow ecosystems, with or without bogs, should also be managed with regard to water quality issues and distrubed as little as possible. Not only is it very important to maintain the ecosystem intact, but shadetrees are crucial both maintaining runoff characteristics for and controlling the geohydrologic balance of feeder and draining streams further down the watershed. In addition, wetlands and bogs interact with surface disturbances such as surface mines.

Some Forest activities are covered under nationwide permits granted by Section 404 (f) (1) (A)&(E) of the Clean Water Act. A careful reading of that part of the Act refers to roads and harvesting forest products which are themselves subject to regulation if the conditions of 404(f) (2) apply. Other activities must follow the established permit processes pursuant to Section 404 of the Clean Water Act. It is suggested that the Forest Service review the regulations found in 33 CFR 323.4 & 330 and revise any plans in light of these regulations.

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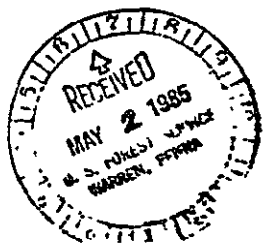
This is being mentioned here because of the widespread peat mining going on throughout Pennsylvania. Many of these activities are being carried on without proper permits. Such operations are subject to control under Section 404 of the Clean Water Act. The Forest Service should include such areas in their inventory of resources and long term planning efforts. Our staff can be of help in evaluating the Forest for these resources.

Timbering

Elsewhere in our comments the data base has been mentioned as an item requiring additional work. Timbering is planned on the basis of data base development and although this aspect is discussed later, under Alternatives and Analyses, the comments presented here reflected the need for an improved data base.

Our review failed to note where the timber sale size is stated and presumed it would fall into section on Harvest Cutting Methods, under Forest Guidelines and Standards (p 4-5 ff of the Proposed Plan). It has been our observation that harvesting operations, though specifically limited to 40 acres or less, are often close enough to be considered contiguous. We recognize that economics often dictate this proximity, but the result is that more acreage than the 40 acre limit is subjected to harvesting within the same time frame. We have determined that in some watersheds in the East nearly 50% of a watershed may be clearcut within a 5 to 7 year period. This represents a major potential runoff problem with regard to both flows and pollutant loads which receiving waters may be incapable of tolerating, resulting in irreparable water quality impairment. The Forest Service should review those parts of the Proposed Plan that are likely to result in this type of watershed harvesting and discourage sales where possible. We also suggest that the Forest Service might consider developing a sliding scale where the greatest percentage of acres harvested in any 5 to 7 year span would be no more than 25 or 30 percent.

Logging operations, especially the clearcutting method that is so often used, carries a recognized potential for water pollution. We appreciate the rules imposed. However, we feel the upper slope for harvest, regardless of stream characteristics, should not be as great as 40% (p 4-11 of the Proposed Plan) because of the potential for high intensity storms of short duration. These storms have produced the greatest potential for flooding and erosion to occur. We feel that the 40% limit is too high, especially where inadequate assessment may allow clearcutting across what may be misclassified as intermittent or ephemeral streams. The Forest Service should revise these specifications and err on the side of safety, rather than allow clearcutting in areas that may appear to be acceptable for such harvesting methods.



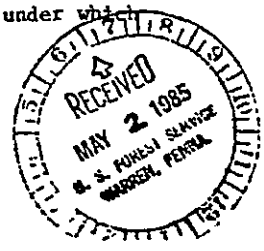
We appreciate the mandate of tying the Forest's objectives to the economics of sustained yield. Yet, we feel the Proposed Plan may be skewed too much in the direction of economics. Harvesting may lead to environmental losses that are not immediately obvious, but which nonetheless can result in future economic dislocations. The discussion above regarding clearcutting across drainage patterns is one example. Another example can be found on page 3-13 of the Proposed Plan, whereby black cherry timber development is listed as a major objective because, as mentioned on 3-14, the Forest "... manages a significant (portion of the world's) black cherry timber." Undoubtedly, this is an important economic species, but this practice will require intensive forest floor and understory management along with strict control of the deer herd. From portions of the document, one might conclude that the Allegheny Hardwoods are nothing more than a transitional/successional grouping but monetarily valuable resources.

Another example of this is the discussion on page B-22 ff regarding timber prices. In forming the benchmark, the prices were not varied. In a worst case scenario, in which commodities disappear, prices might rise excessively for valued timber resulting in crippling economic losses to the Forest. In addition, note 6 of Table 4-3 states that no market for aspen is available, but page 4-15 includes aspen stock as part of the pulpwood economy. In both these cases it appears that economic priorities take precedence over ecological values. This is further substantiated in the Proposed Plan where it is stated that aspen stands will be replaced, presumably, by some stocks that are considered to be of greater value. Little regard is given to the ecological suitability of the replacement species. We feel the Forest Service should inventory its holdings for pockets that have been undisturbed and are ecologically significant to evaluate and establish long term trends that might govern planning practices.

Lastly, we find the documents contain sparse information concerning air pollution impacts from vehicles used in timbering and for oil and gas operations. In addition, stationary sources supporting such operations should also be evaluated.

Oil & Gas and Minerals

Oil and gas play a major economic role in the area, but they also pose acknowledged concern from the environmental standpoint. In those watersheds where these resources will likely be developed, we think that the Forest Service should proceed with caution rearding timbering plans. In addition, there is little mention of the coal reserves of the area. While we realize that the oil and gas reserves are more attractive at this time than coal, it is important to long term planning that coal extraction be considered for its potential to adversely affect the environment. This is especially important in light of the renewable resources and the objectives of the various legal mandates under which the Forest Service operates.



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Reclamation

Reclamation and restoration of disturbed lands also needs to be viewed from the perspective of its long term ecological and economic implications.

As previously mentioned, access roads to the Forest's lands are in use or are planned. For those areas where the black bear is the indicator species, roads should be severely restricted or barred In addition, roads are recognized for their serious water pollution potentials. The Proposed Plan should focus on the available technology aimed at eliminating or ameliorating this source of pollution.

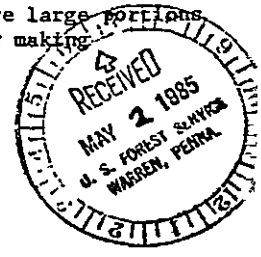
Alternatives and Analyses

On page 3-13 of the Proposed Plan the first four Needs reflect upon forest management as it relates only to timber resources. On page 5-3, reference is made to monitoring the Forest and using the information in adjusting plans and activities. It is obvious that detailed information is unavailable regarding which system of forest management is most appropriate.

Appendix B contains information on how the management problems were resolved. Page B-33, under No. 2, the limitations of existing data are mentioned with regard to its usefulness in establishing the ecological land type. The text continues that the Plan should be based in part on land type association, a broad classification system that is presumably founded upon current conditions. The benchmark analyses (p B-116 ff) are pegged to this classification system, and the current situation. As a result, the constraints can be manipulated. For example, the long-term sustained yield is probably based upon best guess founded on experience and judgment. However, when economic returns are the dominant goal, ecological values are shortchanged. This is exemplified by the discussion on page B-122 where a statement regarding data gaps and inadequacies appears. Allocation of only 7% to activities that exclude timber harvest is very low in terms of the total land base and its variations (p B-133).

We feel that the alternatives could be improved in the following way:

Section 2 of the Draft EIS includes a discussion of alternatives that appear to be based upon 1) assumptions (B-122); 2) insufficient inventory data (B-215); 3) uncertainties regarding timber regeneration (3-6 ff of the Proposed Plan); and 4) other judgments and experiences mentioned throughout the documents. If all these uncertainties were incorporated into a systematic research program, then we feel other options can be developed using the above deficiencies as caveats. With the absence of sufficient historical data base, it cannot be unequivocally stated that the current hardwood types are not part of a transitional/successional phase. If this is accepted as a reasonable premise, then it is logical to leave large portions of the Forest alone, until such time as a firm data base for making logging decisions is in hand.



With this approach, the concept of sustained yield would be severely reduced to timber production only in areas that have been very carefully selected and where it is determined that harvesting will not interfere with climax forest dynamics. Considering the economic importance of oil and gas, this alternative would probably not significantly affect the local economy too drastically. Page 3-55 of the Proposed Plan indicates that fluctuation of timber volumes is tenable. In addition, page 2-5 states that the Allegheny Forest is a small portion of the "... local region's sawtimber market ...". Using this alternative, the Forest Service could meet some of its mandated management requirements and assure that planning will be in keeping with the local ecological possibilities as they rely upon the geological/pedological system. Furthermore, this may yield increased environmental benefits through improved water quality and perhaps restoration of some of the original ecological values.

General Comments

• On page 3-17 of the EIS, an incomplete sentence leaves the discussion of endangered and threatened species incomplete.

• Page 4-3 of the EIS, under causes of environmental effects, the reference to roads should include the specifications of building and repair or at least contain a reference. For example, the Proposed Plan (p 4-58) mentions some restrictions, but the effects of construction, maintenance, use schedules, and production of road surface materials should be included.

In addition, road corridor width, described on page 4-59 of the Proposed Plan, seems to be wider than necessary for most Forest highways, especially for those that are to be returned to non-roadway uses. Along with this, the Proposed Plan does not seem clear with regard to road grades. How are low-grade roads to be designed for limited or discontinued uses if such long-term construction methods, such as culverts, bridges, and hard aggregate fords are used?

• On page 4-20 of the Proposed Plan, under the discussion on soils, it is stated that surface disturbance will be no more than 15%. Does this refer to the analysis area, management area, or some other base area?

• The forest floor/understory conditions of fern and striped maple are often referred to. Some work should be considered towards characterizing the ferns and to ascertain why the ferns are so successful. Some ferns require acid and moist conditions while others prefer alkaline situations. Prior to finalyzing plans, we think the Forest Service should determine which conditions exist.

• We note that the Forest Service wants to carry out forest transition in some areas. Is this for economic or ecological reasons?



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New York State Office of Parks, Recreation and Historic Preservation
The Governor Nelson A Rockefeller Empire State Plaza
Agency Building 1 Albany, New York 12238
518-474-0456

Orin Lehman
Commissioner

April 29, 1985



R. Forrest Carpenter, Forest Supervisor
Alleghany National Forest
P.O. Box 847
Warren, PA 16365

Dear Mr. Carpenter:

I am writing in regard to the draft Land and Resource Management Plan and accompaning Draft Environmental Impact Statement (DEIS) for the Allegany National Forest (ANF). As you are aware, our Allegany State Park is situated immediately adjacent to and north of the Allegany National Forest. We have a special interest in coordinating our master planning efforts for this, our largest state park, with your efforts. We hope to hold workshops this coming June for the purpose of identifying issues and concerns which may apply to the recreation services component of the master plan for our state park. We hope that a representative of the ANF can participate in these workshops.

The following comments were prepared by staff of the Office of Parks, Recreation and Historic Preservation (OPRHP) and of the Allegany Regional Office of OPRHP. Many of the comments are requests for clarification or additional information. Overall, the plan and DEIS are quite comprehensive and informative. I am sure that the final plan and Environmental Impact Statement will be of substantial assistance to us as we progress the planning for Allegany State Park.

Comments:

Deer Management. One apparent problem that both the National Forest and State park share is the effect of deer browsing on regeneration of forest. Could additional information be provided on management of deer population during (and following) the creation of additional areas of early succession forest?

Management Areas and Management Prescription Numbers. Use of the terms "management areas" and "management prescriptions" within the plan and DEIS should be further clarified. Also, there seems to be some inconsistency with the use of management prescription numbers in the plan and the DEIS. For example, there is no area 6.8 in the plan while this management area received considerable discussion in the DEIS. Use of color coding or zip-a-tone would appreciably enhance the interpretation of the management area maps.

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338 pg 4 of 4

11. DEIS Pg. 4-48 Will vegetative diversity develop following natural distrubances, given the expected deer populations on ANF?

Beech may survive as climax type (if it survives beech scale disease). Hemlock, however, may be browsed to a point which relegates it to a minor component of forest stands.

12. DEIS Pg. 4-64 Water Quality: There are certain streams in the National Forest which drain into Allegany State Park. The description of the preferred alternative indicates that these ANF areas will be managed on an even aged basis. Protection of the water quality of these streams is particularly important to us since they are the headwaters for heavily used recreation areas in the Quaker run area of Allegany State Park.

13. DEIS Pg. 4-73 The effects of white tailed deer on forest vegetative change should be specified.

Thank you for this opportunity to provide input into your planning process for the Allegany National Forest. Please keep both myself and Mr. Hugh Dunne, Regional Manager for the Allegany Region of OPRHP on your mailing list for notices concerning the final plan and EIS.

Sincerely,

Ivan Vamos
Deputy Commissioner for
Planning and Operations

IV/krs

cc. H. Dunne
R. Anderson

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for Planning and Operations
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Hugh Dunne
Regional Director
Allegany Region, OPRHP
Allegany State Park
Red House Area
Salamanca, NY 14779

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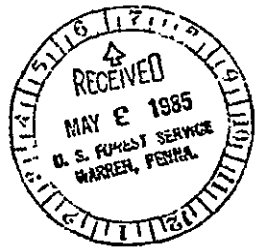
340 pg 1 of 8 (Late)

United States Department of the Interior

OFFICE OF THE SECRETARY
MID-ATLANTIC REGION
Custom House, Room 502
Second and Chestnut Streets
Philadelphia, Pennsylvania 19106

May 2, 1985

ER 85/141



Mr. R. Forrest Carpenter
Supervisor
Allegheny National Forest
Spiridon Building, Box 847
Warren, Pennsylvania 16365

Dear Mr. Carpenter:

The Department of the Interior has received and reviewed the Draft Environmental Impact Statement (DEIS) and the proposed Land and Resource Management Plan (Plan) for the Allegheny National Forest. We offer the following comments for your consideration:

GENERAL COMMENTS

The Forest Management Plan that eventually will be adopted for this Forest will help to guide management decisions for many years to come. Thus, a full disclosure of potential impacts is extremely important in this document. In our view, the DEIS and the Plan do not sufficiently address several key areas where the Department has a significant interest. We therefore recommend that these documents should be revised in order to reflect the following areas of concern.

Fish and Wildlife

The DEIS and the Plan both adequately address the management and the human uses of the timber resources. However, in the discussions addressing wildlife, there is an overemphasis on game animals and the opportunities for hunting and fishing. The Department agrees that habitat manipulation is one of the best ways to manage wildlife in the Forest, as this type of management impacts all of the species and can be accomplished in any of the proposed alternatives.

There is some concern over the use of the term "mitigation" throughout the DEIS and the Plan. Strictly defined, mitigation means to lessen or alleviate adverse impacts. However, in general use, the term mitigation also includes measures to compensate for adverse impacts. An example of mitigation in the project area would be to reduce the losses of wildlife habitat by improving remaining habitats with shrub plantings. In regard to oil and gas development, it is realized that owners of subsurface minerals have the right to retrieve those minerals. However, the surface owners also have certain rights to protect their interests, which, in this case, are in the public interest. We believe that some of the impacts associated with oil and gas development could be mitigated through habitat improvements. We also believe that impacts to surface and ground waters can be avoided by strong enforcement of State and Federal water quality laws.

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Adverse impact to wildlife habitat resulting from road construction and surface disturbances associated with oil and gas development could be partially offset by revegetating with species beneficial to wildlife. Fruit producing native shrubs such as dogwoods, winterberry, honeysuckle and hawthorn could be planted along the borders of cleared areas. This practice should be made a condition of any permit issued to developers and road builders.

More emphasis should be made toward protecting and maintaining habitat, and less on public access, as wildlife benefits. We agree that many people do not venture far from their vehicles, but roads should not be considered a benefit to wildlife because they allow people to drive to observe or hunt wildlife. The roads do more harm than good, to fish and wildlife, except in certain cases where access may be necessary to control wildlife populations.

We believe that modifications could be made to the Plan which improve wildlife habitat at little or no expense to the Forest Service. For example, the oak type forests should not be reduced to the extent proposed. This forest type provides important mast production different from and in addition to other forest types and, as stated in the text, the timber value is nearly the same as cherry.

Minerals

The Plan is very difficult to read from a petroleum resource management point of view, because there is no cohesive discussion of oil and gas management anywhere in the document or its attendant DEIS. One must take a snippet of information from here and there in order to piece together the "big picture."

The Department feels that information and/or a chart showing the percentages of lands in the Forest that are open to mineral leasing, lands subject to restrictions, and lands completely closed to mineral leasing and development, needs to be incorporated into these documents. It is possible to qualitatively determine these percentages but, due to the importance of this resource, we recommend that this information be provided in the documents by county. The DEIS and Plan do not identify probable effects of other resource activities on the exploration and development of oil and gas, or the effect of this development on other resource activities. Since the Forest does seem to have a strong possibility for mineral development, more information is needed in the document than is presently available, possibly including a mineral inventory with maps. A clearer summary and/or discussion of the procedures of the leasing and development process, along with the permit procedures, as it deals with the oil and gas resources, would be helpful.

The Forest documents correctly identify oil and gas as the only minerals whose exploration and development will significantly impact the Forest in the next 50 years. Other minerals which occur within the Forest's boundaries (coal, clay/shale, sand and gravel) may have local development impact. These ancillary minerals should be addressed in the DEIS and the Plan. Field investigations by the Bureau of Mines and the U.S. Geological Survey indicate potential coal resources in the southeastern corner of the Forest.

We believe the Forest should be taking a more aggressive approach to oil and gas management than is currently planned. The 95 to 96 percent private mineral ownership in the Forest is a big problem, but it does not mean that the Forest is precluded from any effective control on these lands. A whole body of case law exists for the preservation of the rights of a surface owner when a mineral development activity occurs.



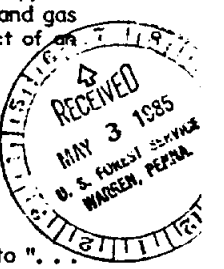
340 pg 3 of 8

The Plan and the DEIS make no mention of the fact that when private surface lands are occupied for mineral development, the surface owner is often entitled to payments for damages or the loss of surface productivity. The documents do not address whether the Forest Service intends to seek reimbursement for the loss of its timber crops during mineral surface usage or to seek damages for surface degradation when it occurs. We recommend that the Forest identify its exact rights on all outstanding and reserved mineral tracts, and pursue the public's monetary interest in an aggressive, programmed manner.

The Plan allows for the leasing of all Federal mineral lands outside of the Allegheny National Recreation Area and (presumably) the Hickory Creek and Allegheny Islands Wilderness areas. A problem arises in that once the available Federal lands are leased they will be unavailable for exchanges with land in those management areas where private oil and gas development would conflict with surface prescriptions. We recommend that exchanges should be the preferred tool for the consolidation of subsurface rights. When Federal mineral lands are leased, the public receives only 1/8 (12.5 percent) of the money derived from the sale of the oil and gas resource. When Federal mineral lands are exchanged, however, the public derives a full 100 percent return on the putative value of the mineral estate. We recommend that the Forest set up a program of identifying and evaluating lands for exchanges and the removal of those lands from leasing availability.

Allegheny National Forest's planning process includes what is apparently a complex, multidisciplinary analysis of the Forest under several different management scenarios. Each analysis includes the effect of "low potential oil and gas development" within the Forest. Since the DEIS does not include the computer model(s) which analyzed the data used in the analyses or the data which was input, it is impossible to say whether the results of the computer runs gave meaningful results or not. However, it appears that the FORPLAN computer runs were flawed from the start, because the Forest chose to assume a "low oil and gas development" scenario from which to draw all of the oil and gas exploitation impacts calculated into their various computations. The "low" scenario was chosen despite the fact that the Forest's own "ID Team concluded that the high' demand scenario would represent the most like rate of development." (DEIS B-76). The Forest modelers attempted to show that the low' demand scenario was not too detrimental to their results by running a single benchmark model with "high oil and gas demand" (or the present reality) included in its parameters. They then compared the outputs from this run to those derived from a "low development" run.

The problem is that even if a "high oil and gas demand" parameter had been used for all of the Forest's runs, the results may still have fallen short of reality, because the Allegheny National Forest contains few deep wells (those drilled to the middle Devoninan Tully Limestone or deeper). Significant petroleum reserves may lie undiscovered in the deep formations under the Forest. If so, future oil and gas development in the Forest will be considerably greater than the present ("high" demand) level. Consequently, we believe all of the Forest's FORPLAN runs should have been based on a "high oil and gas demand" scenario with an additional benchmark run included to analyze the effect of an even higher level of development.



SPECIFIC COMMENTS

Fish and Wildlife

Overview, Pages 1-15 and 1-16 - Problem 4 Wildlife Habitat

Paragraph 3. It is encouraging that the wildlife habitat program has expanded to ". . . emphasizing habitat improvement for game species - turkey, deer and grouse." However, there are many other species which can benefit from habitat improvements.

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Deer Populations - The timber management problems are not necessarily the fault of overgrazing by deer. Because of the ideal habitat which developed as a result of widespread clear-cutting in the late 1920's, deer populations increased significantly. Unfortunately, about 85 percent of the Forest is presently 51 to 90 years old and, therefore, in a stage which does not provide particularly valuable habitat for deer. It is agreed that there may be more deer than the present forest composition can carry, but we disagree that there are more deer than the land is capable of supporting. Also, rabbits are not usually associated with northern hardwood forest habitats, and it may be a misconception to blame their decline on deer.

More Roads and Trails - This is a problem that can be resolved and thus should be mentioned in the "Opportunity for Resolution" paragraph. Roads can be closed to most vehicles by requiring oil companies to install gates. Access to these roads disturbs animals during all seasons, which could also be detrimental during high stress times such as winter. The extensive use of the Forest by snowmobiles can compound these impacts. There are no wildlife species which benefit from roads and traffic.

DEIS, Page 2-34 - Wildlife Habitat (Problem 4)

We do not believe increased hunting opportunities for deer and turkey are a benefit to wildlife, assuming the referenced opportunities are a result of better access (more roads).

DEIS, Page 2-39 - Significant Effects of High Demand for Oil and Gas Development

Under present conditions, wildlife and fish are being adversely impacted by oil and gas development to a significant degree. Numerous streams have been seriously degraded as a result of fluid discharges, oil spills and increased sediment loads. Unless there is a complete turnaround in techniques used to dispose of brines, and State and Federal regulations are enforced, these problems will continue to increase. The decline in wildlife benefits will be due to more than just ". . . a drop in big game hunting use."

DEIS, Page 3-13 - Current Timber Management

The first paragraph indicates that black cherry is more abundant in third generation forest stands, and the trend may be a result of deer preferring to browse other tree species. This seems to contradict the idea that heavy deer browsing causes the Forest Service to use expensive measures to assure regeneration of desirable tree species, particularly since black cherry is the most valuable.

DEIS, Page 3-16 - Population Estimates

The Pennsylvania Game Commission estimates the deer population to be somewhere around 20-22 deer per square mile (posthunt population) for this portion of the State. The estimate provided in the text is considerably higher at 48 per square mile (assuming 510,530 acres for the Forest). The text does not indicate whether this estimate is for summer, prehunt or posthunt and may be somewhat misleading. An explanation of how this estimate was obtained should be included in the final document.

DEIS, Page 3-17 - Species Which are Tentatively Sensitive, Vulnerable, or of Concern

The snowshoe hare is on the Pennsylvania list of species of concern and is found throughout the Forest. Management practices proposed could have significant effects on this species.

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DEIS, Page 4-10 and 4-11 - Management Practice: Developed Recreation Site

A section on wildlife should be added to the discussion of this problem.

DEIS, Page 4-17 - Management Practice: Even-Aged Silviculture, Water Quality

The last sentence states that " . . . mitigation measures, if applied, can significantly reduce sedimentation . . .". We believe that reducing sedimentation in streams should not be an optional activity, but is something that should always be done.

DEIS, Page 4-26 thru 29 - Management Practice: Herbicide Treatment

Glyphosate currently comes in several brand names, including "Round-up" and "Rodeo." Because of different inert ingredients in the two brands, "Round-up" has been shown to be more toxic to aquatic life than "Rodeo." We have no information concerning the toxicity of "Rodeo" to warm-blooded animals; however, "Round-up" does not appear to be a major problem. Application procedures, however, may differ between the two brands. For the Forest Service's preferred alternative, a total of 147,000 acres would be treated over the life of the Plan. If the effectiveness is similar for either brand as far as eliminating the undesirable vegetation, we would recommend using the one least toxic to fish and wildlife.

DEIS, Page 4-31, 32 and 102 - Concerning Wildlife Habitat-clearings

Since clearings diversity habitat, we recommend that in addition to grasses planted in these clearings, fruit producing shrubs be planted around the border or scattered in the interior. These could best be planted as saplings and individually protected from deer if necessary.

DEIS, Page 4-109 - Wildlife

We do not believe the only irretrievable or irreversible commitment of wildlife is the loss of hunting opportunities. Habitat changes from timber management, road construction, recreation areas and oil development affect wildlife in more ways than the just opportunity for people to hunt them.

Plan, Page 4-22 - Soil Group III

Poorly drained (hydric) soils are indicative of wetland areas. Management programs should restrain development, particularly with such projects as roads, hiking trails, ORV trails, and oil and gas operations.

Plan, Page 4-55, Paragraph 5 (Also pages 4-69, 4-48, 4-98, 4-111, 4-122)

There were no wetland species used as indicator species except for beaver (which are discouraged around trout streams). Great blue herons depend on wetlands and to a certain extent so do American woodcock; however, the Forest Management Plan does not seem to manage wetlands for these species.

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Minerals

Plan, Pages 4-123, 4-134, 4-143, 4-145, and 4-161

Federally owned minerals in Management Areas 7 and 8 will be closed to "exploration by any methods causing surface disturbance. Consent to mineral leasing will be given only if minerals can be extracted with no surface occupancy." In Management Area 6.4,

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"Federally owned oil, gas, and other minerals within the NRA will not be leased." Because the spatial distribution of Federally owned minerals is not shown in the DEIS or the Plan, it cannot be determined how many acres will actually be impacted in each of the management areas. It is suggested that future versions of the documents include this information.

DEIS, Page B-45

The Plan lumps all of the "high-development" areas in which the "land condition is dominated by intensive oil and gas developments . . ." into management area 9.1 where "No management practices will be scheduled . . .. Only activities necessary to protect resources or incidental users will be carried out as needed." (Allegheny Plan 4-147 and 4-148). The subject document also plans for the intensive development of oil and gas in management areas where the planning team "felt we could still retain a significant portion of the general theme of the prescription in a high intensity oil and gas development . . ." (DEIS B-45). These are Forest Plan Management areas 2 and 3. The Forest has apparently decided that "low oil and gas development" will not affect management goals in Forest Plan Management areas 6.1, 6.2, and 6.3 although the documents do not state this.

How the Forest will handle intensive development in areas which have planned for it (management areas 9.1, 2 and 3) is only discussed for 9.1 (the "no management practices" area). Exactly what will occur if an "intensive" oil and gas field is discovered in a management area that does not plan for it (management areas 6.1, 6.2, 6.3, 6.4, 7, 8 and wilderness) is not discussed.

DEIS, Page I-17 - Problem 5 Private Oil and Gas Development

Paragraph 4. Whereas it is true that monetary benefits are great, we do not agree that environmental consequences are minimized only through a spirit of cooperation. Past experiences indicate that the loss of productivity over many miles of streams and 50,000 acres of forest land is a result of oil and gas development. We believe more control is necessary to prevent these losses from continuing and to correct those impacts which have occurred.

Overview - Page 24 - Oil and Gas Development

This paragraph states that the Forest Service would work " . . . to mitigate the significant effects of oil and gas development by emphasizing a cooperation and education approach." We favor cooperation and education as a means of ensuring developer awareness to avoid problems, but we do not believe that an education program would mitigate for damages. We also believe that the statement "Enforcement is also an option, if necessary . . ." is appropriate. Once the operators have been "educated" they know enough not to damage the environment. Reeducation and cooperation are not the answers. There have been too many watersheds adversely impacted by "educated" developers. We realize the Forest Service has little control over discharges into surface or ground waters, and also realize that this is not a problem unique to the Allegheny National Forest. However, it is a problem that must be addressed.

Hydrology

DEIS, Page 4-37; Plan - Page 4-42

Most potential ground water impacts have been considered, but we do have concerns regarding the source of water to be used for secondary recovery of oil. Would this withdrawal and use of water for this purpose result in ground water impacts?



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The Forest Service proposes to encourage large, efficient waste water disposal systems operated and managed by municipal or county governments to use Forest lands. Moreover, sanitary landfill methods are considered suitable for waste disposal on Forest lands except in management areas 5, 6.2, 7 and 8. The documents should indicate any impacts or monitoring needs resulting from these actions, to protect ground water and surface water.

DEIS, Pages 4-8 to 4-11

Construction of new recreation facilities and the expansion of existing facilities will have additional environmental impacts that have not been mentioned. Paved roads and parking lots will have rapid runoff and less infiltration into the ground. This runoff will carry sediment and any uncontrolled waste into lakes and streams.

DEIS, Page 4-17 - Water Quality

Timber harvest will cause a much more rapid runoff and higher flows following storms. As a result, some low-lying areas may be subject to flooding unless mitigating measures are taken.

REFERENCES

We suggest that the following references on the geology, geo-chemistry and mineral resource potential of roadless areas in the Allegheny National Forest be included in Chapter 8 for the benefit of future land use planners, since this is a 50 year plan:

Hickling, N.L., Schweinfurth, S.P., and Adrian, B.M., 1983, A reconnaissance geochemical survey of the Allegheny Front and Hickory Creek Roadless Areas, Allegheny National Forest, Warren County, Pennsylvania: U.S. Geological Survey, Open-File Report 83-5, 20 pp.

Hickling, N.L., Schweinfurth, S.P., and Adrian, B.M., 1983, A reconnaissance geochemical survey of the Clarion River Roadless Area, Allegheny National Forest, Elk County, Pennsylvania: U.S. Geological Survey Open-File Report 83-22, 14 pp.

Schweinfurth, S.P., Hickling, N.L., and Person, M.A., 1982, Geologic map of the Clarion River Roadless Area, Elk County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1444-A, scale 1:50,000.

Lesure, F.G., 1983, Geologic map of the Cornplanter Roadless Area, Warren County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1510-A, scale 1:24,000.

Lesure, F.G., and Day, G.W., 1983, Geochemical maps of the Cornplanter Roadless Area, Warren County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1510-B, scale 1:24,000.

Lesure, F.G., deWitt, Wallace, Jr., and Welsh, R.A., Jr., 1983, Mineral resource potential map of the Cornplanter Roadless Area, Warren County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1510-C, scale 1:24,000.

Schweinfurth, S.P., Hickling, N.L., and Person, M.A., 1982, Geologic map of the Allegheny Front and Hickory Creek Roadless Areas, Warren County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1442-A, scale 1:50,000.



340 pg 8 of 8

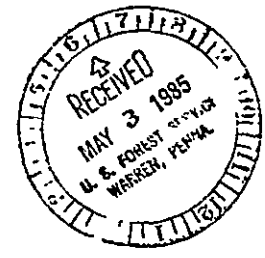
Schweinfurth, S.P., deWitt, Wallace, Jr., and Girol, V.P., 1983, Mineral resource potential map of the Allegheny Front and Hickory Creek Roadless Areas, Warren County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1442-B, scale 1:50,000.

Schweinfurth, S.P., deWitt, Wallace, Jr., Welsh, R.A., Jr., and Behum, P.T., 1983, Mineral resource potential maps of the Clarion River Roadless Area, Elk County, Pennsylvania: U.S. Geological Survey Miscellaneous Field Studies Map MF-1444-B, scale 1:50,000.

Thank you for the opportunity to comment on these documents.

Sincerely,

Anita J. Miller
Regional Environmental Officer



Public Agency Comment

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COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission
P.O. BOX 1567
HARRISBURG, PA. 17120

OFFICE OF
EXECUTIVE DIRECTOR
TELEPHONE
AREA CODE 717-787 3633

ADMINISTRATIVE DIVISIONS

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LAND MANAGEMENT	787-6818
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May 2, 1985

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MAY 6 1985
U. S. Forest Service
WARREN, PENNA.

Mr. R. Forrest Carpenter
Forest Supervisor
Allegheny National Forest
P. O. Box 847
Warren, PA 16365

Dear Mr. Carpenter:

We have reviewed the Overview, Draft Environmental Impact Statement, Draft Plan, Appendix B, and Maps of the Alternative Plan and wish to make the following comments concerning these documents.

OVERVIEW OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND THE PROPOSED LAND AND RESOURCE MANAGEMENT PLAN

1. On page 14, under Endangered and Threatened Wildlife, Fish and Plants, it states "The bald eagle is the only endangered species that is known to occur on the Forest. Their nests have been located on the Forest. The osprey and Henslow's sparrow are listed by the State as threatened". To the best of our knowledge, there are no nesting bald eagles on the ANF and we feel that this is propably a typographical error and should read "Their nests have not been located on the Forest". The osprey has been upgraded to endangered on the State List as of December 17, 1984.

PROPOSED LAND AND RESOURCE MANAGEMENT PLAN

1. On page 4-7, under Vegetative Management, it states "In intermediate cuttings, Dogwoods, American Hornbeam, Witch Hazel, Serviceberry and other low-growing, flowering, and fruiting trees and shrubs under six inches in diameter should not be cut". We would suggest that "under six inches in diameter" be removed from this statement. We are of the opinion that these species should be retained no matter what their size, particularly the larger diameter classes which would be more likely to produce mast.

2. On page 4-30, under Forest-wide Standards and Guidelines, we suggest that another paragraph with the title Travel Lanes - Islands be added. In clearcuts, travel lanes or islands of trees should be retained. Travel lanes would be narrow bands of trees, irregularly shaped, that would extend from edge to edge of the clearcut. The lanes would be left in hollows and small drainages where possible. If travel lanes are impractical, small islands of trees should be left to break up the large expanse of open area in the clearcut. These should be clumps of approximately 75 trees within each five acres of regeneration cut. The leaf clump should not exceed 5% of the area to be generated.

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3. On page 4-31, under Nesting Structures, besides the nesting boxes installed in wetland habitats and goose nesting structures, we would suggest that nesting structures be considered for other types of wildlife such as bluebirds, wood ducks, squirrels, screech owls, kestrels, etc. These would not only be placed in wetland areas but in openings along the edges of regeneration cuts.

4. On page 4-33, under Endangered, Threatened, and Sensitive Species, the osprey on the State List has been upgraded to endangered. We are enclosing an updated version of the State List for your reference.

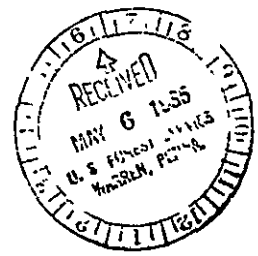
5. On page 4-160, under 2600 Wildlife Management, it states "Hunting, fishing, and noncommercial trapping may occur subject to applicable state and federal laws". We would like to see that changed to "Hunting, fishing, and trapping will be permitted subject to applicable state and federal laws". We are concerned about the wording "noncommercial trapping" inasmuch as the fur resource is sold on the open market by trappers though it is not generally a large source of income, but is more a by-product of their recreation.

DRAFT ENVIRONMENTAL IMPACT STATEMENT - LAND AND RESOURCE MANAGEMENT PLAN

1. In the summary, on page xii, under Endangered and Threatened Wildlife, Fish, and Plants, the same comment on the osprey applies as in previous discussion.

2. On page 1-11, under Problem 1 Providing Developed Recreation, we are somewhat concerned about the increased development proposed for recreation along the shores of the Allegheny Reservoir. The Game Commission has invested a considerable amount of money and manpower in attempting to encourage bald eagles to nest in other areas outside the Pymatuning area in the Commonwealth. The sitings of bald eagles in the proximity of the reservoir would indicate that the potential exists for nesting. Since bald eagles tend to nest within 100 yards of open water, there is some concern that increased development and human activity could have a detrimental effect on future bald eagle nesting attempts.

3. On page 3-16, under Endangered, it states "The bald eagle is the only endangered species that is known to occur on the Forest at the present time. Both adult and juveniles have been observed in recent years; River between Warren and the Kinsua Dam and along the shoreline of the Allegheny Reservoir except when it is covered with ice". It appears that a portion of this paragraph is missing. Also as stated previously, we will supply you with an updated version of the Game Commission's Wildlife Classification List so that corrections can be made as to the status of the osprey.



Public Agency Comment

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4. We would suggest that in all of the documents where hunting is mentioned that trapping be added. To the best of our knowledge, trapping is only mentioned once and that is in context of the wilderness areas and the prohibition of noncommercial trapping as mentioned earlier in our comments. We are concerned that if trapping is not mentioned in the documents, some people will construe that it is not permitted. Therefore, we are requesting that it be placed prominently in the documents; for example, in the Draft Environmental Impact Statement, in the summary on page xii, where dispersed recreation is discussed.

We wish to thank you for the opportunity to review the Draft of the Environmental Impact Statement of the Proposed Land and Resource Management Plan. We look forward to participating in the review of the final document in the near future.

Very truly yours,

Peter S. Duncan
Executive Director

Enc.

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PENNSYLVANIA GAME COMMISSION
WILDLIFE CLASSIFICATION 341 pg 4 of 4

ENDANGERED

BIRDS

Bald Eagle (*Haliaeetus leucocephalus*)
Osprey (*Pandion haliaetus*)
King Rail (*Rallus elegans*)
Short-eared Owl (*Asio flammeus*)
Bewick's Wren (*Thryomanes bewickii*)

MAMMALS

Indiana Bat (*Myotis sodalis*)

THREATENED

Least Bittern (*Ixobrychus exilis*)
American Bittern (*Botaurus lentiginosus*)
Upland Sandpiper (*Bartramia longicauda*)
Black Tern (*Chlidonias niger*)
Sedge Wren (*Cistothorus platensis*)
Henslow's Sparrow (*Ammodramus henslowii*)

Small-footed Myotis (*Myotis leibii*)
Eastern Woodrat (*Neotoma floridana*)

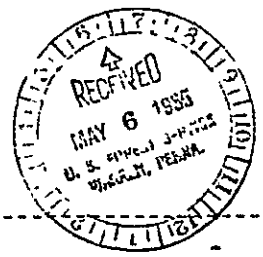
SPECIES OF CONCERN

Great Blue Heron (*Ardea herodias*)
Cooper's Hawk (*Accipiter cooperii*)
Red-shouldered Hawk (*Buteo lineatus*)
Northern Harrier (*Circus cyaneus*)
Bobwhite (*Colinus virginianus*)
Barn Owl (*Tyto alba*)
Red-Headed Woodpecker (*Melanerpes erythrocephalus*)
Purple Martin (*Progne subis*)
Marsh Wren (*Telmatodytes palustris*)
Eastern Bluebird (*Sialia sialis*)
Grasshopper Sparrow (*Ammodramus savannarum*)
Vesper Sparrow (*Pooecetes gramineus*)

Keen's Little Brown Bat (*Myotis keenii*)
Snowshoe Hare (*Lepus americanus*)
Rock Vole (*Microtus chrotorrhinus*)
Spotted Skunk (*Spilogale putorius*)
River Otter (*Lutra canadensis*)
Bobcat (*Lynx rufus*)

STATUS UNDETERMINED

Northern Goshawk (*Accipiter gentilis*)
Sharp-shinned Hawk (*Accipiter striatus*)
Long-eared Owl (*Asio otus*)
Whip-poor-will (*Caprimulgus vociferus*)
Yellow-bellied Sapsucker (*Sphyrapicus varius*)
Least Flycatcher (*Empidonax minimus*)
Bobolink (*Dolichonyx oryzivorus*)



Maryland Shrew (*Sorex fontinalis*)
Water Shrew (*Sorex palustris punctulatus*)
Water Shrew (*Sorex palustris albibarbis*)
Pigmy Shrew (*Microsorex hoyi*)
Least Shrew (*Cyptotis parva*)
Seminole Bat (*Lasiurus seminolus*)
Silver-haired Bat (*Lasionycteris noctivagans*)
Evening Bat (*Nycticeius humeralis*)
New England Cottontail (*Sylvilagus transitionalis*)
Eastern Fox Squirrel (*Sciurus niger vulpinus*)
Rice Rat (*Oryzomus palustris*)
Red-backed Vole (*Clethrionomys gapperi rupicola*)
Red-backed Vole (*Clethrionomys gapperi paludicola*)
Coyote (*Canis latrans*)
Badger (*Taxidea taxus*)
Least Weasel (*Mustela nivalis*)
Martan (*Martes americana*)
Fischer (*Martes pennanti*)
Eastern Mountain Lion (*Felis concolor cougar*)
Lynx (*Lynx canadensis*)

EXTIRPATED

Peregrine Falcon (*Falco peregrinus*)
Greater Prairie Chicken (*Tympanuchus cupido*)
Piping Plover (*Charadrius melodus*)
Common Tern (*Sterna hirundo*)
Loggerhead Shrike (*Lanius ludovicianus*)
Dickcissel (*Spiza americana*)
Bachman's Sparrow (*Aimophila aestivalis*)
Lark Sparrow (*Chondestes grammacus*)

Eastern Gray Wolf (*Canis lupus lycaon*)
Wolverine (*Gulo gulo*)
Wapiti (*Cervus elaphus canadensis*)
Moose (*Alces alces*)
Bison (*Bison bison bison*)

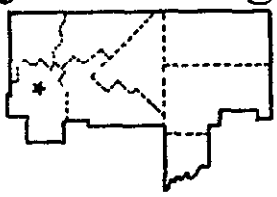
EXTINCT

Passenger Pigeon (*Ectopistes migratorius*)

Public Agency Comment

345 LATE

Forest County Planning Commission



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May 31, 1985

Forest Supervisor
Allegheny National Forest
222 Liberty Street
P.O. Box 847
Warren, PA 16365

Dear Sir:

The County of Forest Planning Commission has examined the five alternatives in the Draft Environmental Impact Statement for the Alleghany National Forest Land and desire to make the following comments. Although all five alternatives have much merit we favor Alternative (D) for the following reasons:

1. The use of private investment would save taxpayer dollars and possibly bring a monetary return to the Forest.

2. More public facilities should generate more tourist dollars to an otherwise depressed area.

3. Although the present campgrounds are well utilized, additional campgrounds, boat landings, and recreational facilities should spread the usage over a larger area.

4. We favor an even level of timber production, not only for the next five decades but for the future also.

5. We favor Alternative (D) because it seems to benefit a diverse group of users rather than any single group.

Sincerely,

Raymond Brosius
Chairman

Public Agency Comment

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United States
Department of
Agriculture

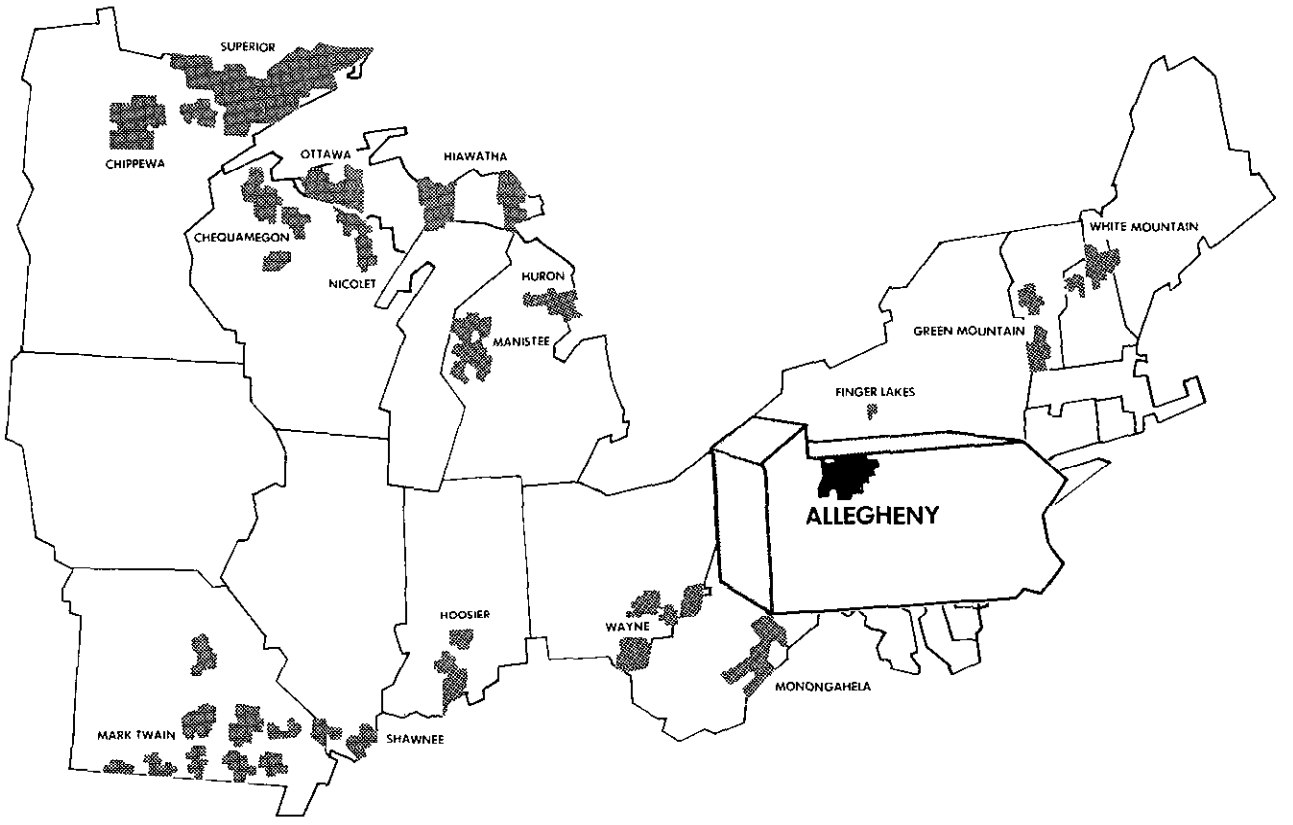
Forest
Service

**Eastern
Region**

Appendix B
Final Environmental Impact Statement

Land and Resource Management Plan

ALLEGHENY NATIONAL FOREST



The Allegheny National Forest

APPENDIX B
(Analysis Appendix)

of the
Final Environmental Impact Statement
for the
Land and Resource
Management Plan

Eastern Region
USDA - Forest Service

March 1986

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APPENDIX B

I. INTRODUCTION

A. The General Planning Process

Although the Forest Service had managed the National Forests under a multiple-use concept for many years, no specific direction to do so existed until the passage of the Multiple-Use Sustained Yield Act of 1960. From this point, several additional pieces of legislation were passed to ensure multiple-use management of the National Forests - the National Environmental Policy Act of 1969 (NEPA) and the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA). The culmination of Congressional efforts to settle the controversies arising over the direction of management of the National Forests was the passage of the National Forest Management Act of 1976 (NFMA).

The planning process as described in NEPA was conceived within the framework of system analysis. That is, the planning process was seen as a rational analytical means of solving the complex problems associated with a multiple-use form of forest management.

The NEPA process as set forth in FSM 1950 describes an eight step environmental analysis process, followed by documentation of the analysis, a decision of the adopted alternative, and implementation and monitoring of the accepted alternative.

The 1979 version of the regulations (36 CFR 219.5) outlines a ten step process which closely follows the steps outlined in the NEPA process:

> Step 1: Identification of issues, concerns, and opportunities - In any systematic approach to problem solving, the first step is to identify the problem. In this step, the interdisciplinary team (ID Team) identifies and evaluates public issues, management concerns, and resource use and development opportunities. What does the public want? What does the Forest Service want? What needs to be done?

Step 2: Planning criteria - The issues, concerns, and opportunities (ICO's) collected and evaluated in step 1 will be used to develop decision criteria for evaluating alternatives. Decision criteria are also used to guide the collection and use of inventory data, analysis of the management situation, and the design and formulation of alternatives. What tests, rules, and guidelines are needed to complete the plan and select the best solution?

Step 3: Inventory data collection - Based on the ICO's, data will be collected which will allow analysis of the problems identified. What are the resources available? In what amounts?

Step 4: Analysis of the management situation - In this stage, the Forest will estimate the range of various goods and services it can produce, projections of demand, potential to resolve public issues, and the technical and economic feasibility of providing various levels of goods and services. The purpose of this section is to allow the Forest to establish or change management direction to better resolve the ICO's.

Step 5: Formulation of alternatives - A reasonable range of Forest plan alternatives will be formulated to provide a variety of ways of responding to the ICO's. Each major problem must be addressed in at least one alternative.

Step 6: Estimated effects of alternatives - What will happen if a certain set of management prescriptions is choosen? This stage estimates and displays the physical, biological, economic, and social effects of implementing each alternative.

Step 7: Evaluation of alternatives - The significant physical, biological, economic, and social effects of each management alternative are evaluated. Alternatives are evaluated with respect to the planning criteria.

Step 8: Selection of alternative - Using the decision criteria, a preferred alternative will be selected.

Step 9: Plan implementation - The preferred alternative will be used to develop multi-year program proposals. These proposals will be consistent with the standards and guidelines set forth in the plan.

Step 10: Monitoring and evaluation - A monitoring plan will be established to evaluate how well objectives have been met and how closely standards and guidelines have been applied. Evaluation reports will be required. Based on these reports, the plan will be revised or amended as necessary.

1. Complexity and magnitude of the problems.

There are so many connections among the ten planning steps, just presenting the steps may not provide a clear picture of the analytical structure or decision-making process. Another way to convey an understanding of the process is to identify the three phases which occur during the process: (1) judgemental or selection phase, (2) analytical phase, and (3) execution phase.

Planning steps 1, 2, 7, and 8 make up the judgemental or selection phase of the process. In this phase, ICO's are identified, and decision criteria are established. Then based on the analytical phase, a perferred alternative is chosen. No one alternative will satisfy all goals and objectives better than the others. The decision maker will need to compare the trade-offs between alternatives and make a judgment about which ICO's and objectives are most important and then select the appropriate alternative to maximize net public benefit.

Planning steps 3, 4, 5, and 6 represent the analytical phase of the process. Appendix B is primarily concerned with this portion of the process. In this phase, data is collected which addresses the ICO's and objectives of the Forest. Estimates of the Forest's potential to address the ICO's are developed. Alternatives which focus on producing various combinations of goods and services are developed and the effects estimated. This information is then provided to the decision maker to use in choosing a preferred alternative.

The final phase is implementation and monitoring (planning steps 9 and 10). Planned actions will not always produce the desired results. Through monitoring and evaluation, inconsistencies between desired conditions and actual results can be identified and corrected.

2. Opportunity for the use of analytical techniques in analytical phase.

Development of a Forest Plan through the planning process outlined presents an extremely complex analytical process. The regulations require that each plan alternative must be the most cost efficient schedule of management practices, subject to the constraints applied to the alternative. Based on the complexity of the Forest planning process, the Forest Service decided that a linear programming approach to the problem was necessary to assure compliance with the cost efficiency requirements in the regulations. A linear programming/goal programming model known as FORPLAN is being used by all National Forests in this Land Management Planning process.

3. Revision of Problem Statements

Based on public, region, and forest review of the Allegheny National Forest's analysis appendix, the problem statements have been revised. Both the original and revised problem statements are listed below:

Original Problem Statements

Problem 1:	Mix of Recreation Opportunity
Problem 2:	Quantities of Timber
Problem 3:	Integration of Outstanding Mineral Development
Problem 4:	Wilderness

Revised Problem Statements

Problem 1:	Providing Developed Recreation Opportunities
Problem 2:	Providing Dispersed Recreation Opportunities
Problem 3:	Timber Management
Problem 4:	Wildlife Habitat
Problem 5:	Private Oil and Gas Development
Problem 6:	Wilderness

Revised problem statements 1 and 2 are a further refinement of the original problem statement 1. Revised problem statement 3 was derived from part of original problem statement 2. Revised problem statement 4 is a combination of various parts of original problem statements 1, 2, and 3. Revised problem statements 5 and 6 are rewrites of original problem statements 3 and 4, respectively.

The reasons for these revisions are to clarify and better emphasize areas of the problems. Revising the problem statements is a dynamic process and will continue throughout the planning process in an effort to better define and display the problems. Unless the revisions cause a change in constraints or objectives of an alternative, there is no reason to change the analysis. The changes to date have not affected the alternatives and, therefore, Appendix B, and any discussion of the problem statements in the appendix, is based on the original problem statements.

4. Pennsylvania Wilderness Act of 1984

As a result of the passage of the Pennsylvania Wilderness Act of 1984 on October 30, 1984, the Hickory Creek Wilderness, Allegheny Islands Wilderness, and the Allegheny National Recreation Area were established. The Act releases all remaining RARE II areas from further analysis for wilderness designation until the next planning cycle.

II. INVENTORY DATA FOR INFORMATION COLLECTION

A. Information Organization

Organizing information into an acceptable format for analysis required us to refer to many individual data sources existing on the Forest. Some data sources provided more detail than we could use at this level of planning, while others contained notable gaps in the resource information relating to analysis problems. Section II.B displays a brief list and explanation of the more important data sources used. This section briefly describes the more important information sources used in constructing our final data base. Section III describes how we used this information in the analytical process, specifically the FORPLAN model.

1. Ecological Areas

The 1973 General Soil Inventory of the Allegheny National Forest provided broad soils information and identified broad land type groups for the Forest. A 1981 study, Ecological Land Typing and Field Measurement Analysis, sought to further refine these into Ecological Land Types (ELT) based on soil associations, vegetative indicator species, and climax community types. Since the results of this study were inconclusive, land type groups based solely on physiography or general landform became the basic ecological areas. They differentiate the general land units which have relatively uniform suitability for, or responses to management. Future analysis, perhaps using additional landform categories or the recently completed soil conservation service soil series maps, will establish the specific ecological classification system for the Forest.

2. Analysis Areas

The Forest used the following criteria when initially selecting the resource layers:

- Is it relevant to the planning problems,
- Is data currently in the Forest files,
- Favor layers which provide information useful to more than one resource area,

- Layers should separate land units having significant cost and yield differences for a given management practice.
- The number of analysis areas should be as small as possible, with a maximum of 300.

Using these criteria, we developed the following initial list of resource layers which we felt would allow us to analyze the resource problems using available information:

- Areas with significant public interest and concern,
- Areas with significant differences in road building needs and Recreation Opportunity Spectrum (ROS) potential,
- Areas with significant differences in the potential for oil and gas development,
- Basic resource capability unit,
- Timber Types,
- Stocking level or site index (depending on the timber type),
- Existing age.

Section III.C. contains a detailed discussion of the final analysis area delineators we included in the FORPLAN model.

3. Production Coefficients

a. Timber

Production coefficients or yields are an integral part of the analysis. A wide variety of timber data sources and yield estimation techniques played an important role in the development of the final version of the timber yield tables. Some production coefficients come from published yield tables developed for a broad geographic area, which we tempered using our professional judgement and experience to reflect local timber production capability. Other coefficients resulted from taking local timber inventory data for specific stands and using a local timber growth simulator called SIMAH (Simulation Model for Allegheny Hardwoods) to generate the timber yield coefficients used in FORPLAN. The Timber Management Information System (TMIS) provided

most of the timber inventory data. Finally, for timber types which comprise a small portion of the forest, we examined several other Forests' yield tables (produced generally using the STEMS timber growth simulator), picked the one which most closely resembled our stands, and then tempered it using our professional judgment and local experience.

In summary, the effort we expended to develop a given yield table was directly proportional to the significance of the timber type, relationship to planning problems, or the applicability of the overall management prescription to the Forest. Section III.E.1. provides additional detail by timber type concerning yield table development. Section II.B. provides specific source information.

Timber yields from published yield tables or produced by growth simulators using inventory data require adjustment for small inclusions of land which will produce lower or no timber yields and which are not accounted for in the inventory data. Consequently, we have applied a timber volume adjustment factor to the yield tables in the FORPLAN model. This factor accounts for the following kinds of timber yield reductions:

- Visual Quality standards and guidelines,
- Steep Land, Rocky Land, Riparian Area standards and guidelines,
- Wildlife opening inclusions,
- Land cleared by intensive oil and gas development,
- Existing roads and rights-of-way.

Section III.E.1.h. provides additional information on these adjustments.

b. Wildlife

The TMIS data base provides information on existing wildlife habitat. The Pennsylvania Game Commission's historical data on hunter use coupled with professional judgment established the basis for the big-game hunter-use production coefficients. We estimated small-game and non-game use outside of the FORPLAN model once we completed modeling each alternative. The Recreation Information Management system (RIM) provided comparison

information on hunting use as well as estimates for non-game visitor use. See additional detail in Section III.E.3.

c. Recreation

We estimated recreation yields for each prescription using the following process:

- examine sample land areas on the ANF for each ROS class,
- use them as the base line to calculate potential RVD yields for each ROS class, and
- modify these yields to fit the theme of each prescription and estimate actual yields for each management intensity.

The RIM system was useful in summarizing developed and dispersed recreation facilities and historical recreation use for the Forest. Mapped visual quality objectives displayed the specific locations of the various visual resource sensitivity levels. See additional detail in Section III.E.2.

4. Suitability for Management Practices

Two levels of analysis during the planning process aided in determining the management practices which are tentatively suitable for specific analysis areas. First, we examined specific analysis areas and groups of analysis areas, and specified which management prescriptions or general management strategies were practical to apply to each area. Some management prescriptions are not suitable on certain areas; for example, a wilderness prescription is impractical on an area with intensive road development or on an area showing significant evidence of intensive timber management. For a summary of this prescription suitability on analysis areas, see Table B-4 in Section III.D.3.a.

The second level of suitability concerns the suitability of "FORPLAN prescriptions" to analysis areas. These prescriptions are more site specific. They relate to vegetation characteristics, land type groups, regeneration characteristics, stocking/site index, and

the value of the specific timber species. Each "FORPLAN prescription" reflects all of the significant management activities required to produce the specified yields and land condition called for in that prescription. The same end result on another analysis area may require a different set of activities. For example, regenerating an oak analysis area calls for different practices than regenerating an Allegheny Hardwood analysis area. Table B-5 in Section III.D.3.b., displays a brief summary of this type of suitability determination.

5. Develop Allocation and Scheduling Alternatives

The analysis areas are the smallest land units defined in the FORPLAN data base. Management prescriptions define the major management strategies available on the analysis areas. The FORPLAN prescriptions, then, define specific sets of practices (or alternative sets of practices) required for each analysis area to achieve the major management emphasis. FORPLAN prescriptions contain the costs for the specific practices as well as the outputs (production coefficients) defined in Section II.A.3 above. The suitability analysis defined in Section II.A.4. above identified suitable prescription choices for each analysis area.

With these basic building blocks, we can develop benchmarks and Forest Plan alternatives. Each benchmark or Forest Plan alternative contains a set of objectives which translates into specific FORPLAN constraints. FORPLAN then determines the mix of prescriptions (for each analysis area) required to meet the objectives specified for each alternative or benchmark and to maximize present net value (PNV). Each prescription mix calls for a specific set or schedule of associated practices having specific associated inputs (costs) and outputs (benefits). Sections VI and VII describe the details regarding development of alternatives and benchmarks.

6. Monitor Implementation

The Forest Plan contains monitoring and evaluation requirements that will provide a basis for periodic evaluation of the effects of management practices. It

establishes intervals for evaluating how well the management of and outputs from Management Areas are meeting the objectives established in the Forest Plan. Evaluation will also determine how closely management practices within the Management Areas have followed the standards and guidelines specified in the Forest Plan. Monitoring will verify the validity of the data used to develop the Plan. If we discover significant errors in cost or yield estimates, we can revise our data collection so future analysis will utilize sound information. Monitoring and evaluation will help the Forest determine whether the prescriptions and the allocations have succeeded in satisfactorily resolving the issues included in the problem statements identified during this cycle of planning. Finally, the evaluation process will no doubt identify some new significant issues or resource demands, which we will address during future Forest Plan revisions.

7. Develop Subsequent Programs for Plan Implementation

Much of the data used to develop alternatives will be used to prepare programs and projects for implementing the Plan. The final mix of prescriptions which forms the solution for the alternative (see Section II.A.5. above) specifies activities needed, the amount of each activity, the timing of the activity, and the resulting outputs. Aggregating these activities, their amounts, and their timing by decision variable defines specific resource programs for implementing the alternative. The Forest Plan displays these for the preferred alternative.

8. Definitions for Management Information

The Management Information Handbook (MIH 1309.11a) provides the definitions for outputs, activities, effects, and other information produced through the planning process. This provides the link between the Forest Service Management Model, existing analytical tools, and the Forest Plan.

B. Primary Data Sources

The Allegheny National Forest staff used or considered the following data sources during the information gathering stage of the planning process.

1. General Soil Inventory of the Allegheny National Forest

Wayne E. Humbert, Soil Scientist, 1973.

This Allegheny National Forest publication presents broad soil information, identifies physiographic land types, and gives soil interpretations based on probable hazards or suitability for management.

2. Soils Report: Soils of the Allegheny National Forest

Wayne E. Humbert, Soil Scientist, 1970.

3. Ecological Land Typing and Field Measurement Analysis

Rev. Austin J. O'Toole, Ph.D.; Northwest Institute of Research; July 31, 1981; Contract Number 53-56A1-9-00241;

A study conducted under contract on the Allegheny National Forest which sought to verify Ecological Land Types through vegetation analysis.

4. Interim Soil Survey Report ss for Elk, Forest, McKean, and Warren Counties

Soil Conservation Service, 1983.

Soil series maps for the Allegheny National Forest.

5. SIMAH - Version 1

Northeast Forest Experiment Station, Warren, Pennsylvania.

This preliminary Simulation Model for Allegheny Hardwoods (SIMAH) is a stand table projection model which is distance independent and contains growth coefficients based on individual tree measurements.

6. Timber Management Information System (TMIS)

A nation-wide Forest Service data management system, TMIS, is designed for storing and retrieving timber related information by all levels of forest managers. Information in TMIS comes from forest inventories, silvicultural examination, accomplished projects, and timber management plans.

7. Recreation Information Management System (RIM)

This locally collected data base provides recreation facility and site inventory data as well as recreation activity use statistics. It also contains field estimates of hunting, fishing, and non-game wildlife use.

8. Stand and Tree Evaluation and Modeling Systems (STEMS)

Timber growth and yield simulation model containing coefficients developed from growth plots in the Lake States. A number of Forests in Region 9 used STEMS to develop their yield tables. We did not make any STEMS runs when preparing our yield tables. However, when we prepared yield tables for some of the timber types which are a minor component of the Allegheny National Forest, we used some of the STEMS yield tables developed for other Forests.

9. Pennsylvania Game Commission historical data on hunter use

We referred to this when developing our hunting use estimates for the various Forest Plan alternatives.

10. Allegheny National Forest resource maps

Existing forest maps developed to serve the needs of specific resource areas (timber stand maps, Visual Quality Objective maps, OGM ownership maps, maps of known oil and gas fields, road system maps, etc.) provided important information used to develop analysis areas.

11. Spruce Yield Table

The Chippewa National Forest provided us with a copy of the spruce yield table they developed for their FORPLAN model using STEMS.

12. Spruce Yield Table

The White Mountain National Forest provided us with a copy of the spruce yield table they developed through consultation with the Forest Experiment Station at Durham, New Hampshire.

13. Red Pine Yield Table

USDA-Forest Service Technical Bulletin #1272; Growth and Yield of Red Pine in Minnesota; 1962.

14. White Pine Yield Table

Growth and Development of Older Plantations in Northwestern Pennsylvania; NE-104; Northeastern Forest Experiment Station, Warren, Pennsylvania; Ted Grisez, 1968.

This local work provided comparative data used when constructing the red pine yield table for the FORPLAN model.

15. Aspen Yield Table

The Chippewa National Forest provided us with a copy of the Aspen yield table they developed for the FORPLAN model using STEMS.

16. Aspen Yield Table

Quaking Aspen: Silvics and Management in the Lake States

USDA-Forest Service, December 1975, Agricultural Handbook #486.

Published aspen yield tables for the Lakes States.

17. Oak Yield Tables

Growth and Yield Predictions for Upland Oak Stands

Martin Dale, 1972, Northeast Forest Experiment Station Research Paper NE-241.

These published yield tables provided the basis for the oak yield tables included in our FORPLAN model.

Primary Data Sources

18. Conifer Yield Tables

Biologic and Economic Feasibility of Coniferous Timber Production Systems for the Allegheny National Forest

Dr. Charles H. Strauss, Consultant Resource Economist, and Dr. Todd W. Bowersox, Consultant Silviculturist; October 1, 1982.

This publication is a study conducted under contract for the Allegheny National Forest to determine the potential for softwood production here.

19. Conifer Yield Tables

Hockinson, Joel; 22 Feb. 1983; "Softwoods - Non-FORPLAN Report on Status"

An Allegheny National Forest report prepared to supplement Strauss & Bowersox report. This analysis included softwood price trends from RPA and local historical price trends for hardwoods.

20. Prescription 6.5

Shands, William E. and Healy, Robert G.; 1977; The Lands Nobody Wanted

Discusses management policies for Eastern National Forests, including the Allegheny National Forest.

21. USDA-Forest Service; 198 ; ROS User's Guide

A guide for recreation resource input into Land Management Planning.

22. Costs

The Forest ADVENT Data Base provided the basic information we used to develop costs for the Forest Plan. ADVENT is the annual program budgeting data base which includes projects, the individual activities which comprise them, and the cost for each activity.

23. Wildlife Indicator Species

Anderson, S.H.; C.S. Robbins; J.R. Partelow; and J.S. Weske; 1981. Synthesis and evaluation of avian population and habitat data for Pennsylvania. Non-game Section, Migratory Bird and Habitat Research Laboratory, U.S.F.W.S. 407 pp.

DeGraaf, R.M.; G.M. Witman; J.W. Lanier; B.J. Hill; and J.M. Keniston; 1981. Forest habitat for birds of the northeast. Northeast Forest Experiment Station and Eastern Region, U.S.D.A.-Forest Service. 598 pp.

Degraaf, R.M.; G.M. Witman; and D.D. Rudis; 1981. Forest habitat for mammals of the northeast. Northeast Forest Experiment Station and Eastern Region, U.S.D.A.-Forest Service. 182 pp.

Degraaf, R.M. and D.D. Rudis; 1981. Forest habitat for reptiles and amphibians of the northeast. Northeast Forest Experiment Station and Eastern Region, U.S.D.A.-Forest Service. 239 pp.

Mason, W.T.; C.T. Cushwa; L.J. Slaski; D.N. Gladwin; 1979. A procedure for describing fish and wildlife for Pennsylvania. U.S.D.I., Fish and Wildlife Service

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Primary Data Sources

III. THE FOREST PLANNING MODEL

A. Overview

The FORest PLANning Model (FORPLAN) was the primary analytical tool used in the Forest planning analysis. FORPLAN is a series of computer programs which utilize a linear programming algorithm. This tool evaluates an extremely large number of management options on units of land and selects the combination which optimizes a chosen objective (usually Present Net Value). Because of the size and complexity of the Forest planning problem, the use of this computerized technique is very beneficial. Although it can analyze extremely large problems, it does have its limitations. The Forest's application of FORPLAN considered these limitations as well as the physical characteristics of the Forest in developing our FORPLAN model.

The most important aspects of FORPLAN are that it can:

- analyze very large problems,
- find the optimal solution to the problems, and
- find the most cost-efficient solution to the problems.

This solution is comprised of an allocation of prescriptions which define a particular management emphasis to land areas (analysis areas) and an associated schedule of inputs and outputs necessary to achieve the results. It also allows the Forest to quantify the trade-offs among the issues.

To use FORPLAN, the Forest's input-output relationships are depicted by mathematical equations. FORPLAN generated most of the equations, but the ID Team had to provide the variables of these equations, as well as the coefficients for them. These equations were applied to all analysis areas, each of which was fairly homogeneous with respect to productivity, response to treatment, and cost of treatment; and, at the same time provided some spatial aspect so that solutions could be implemented on the ground. The analysis areas also had to divide the Forest into units which allowed the Forest to address the planning problems.

Once the analysis areas were defined, the management prescriptions were identified. These defined alternative ways each analysis area could be managed to achieve different objectives.

The FORPLAN prescriptions cited sets of individual practices and their associated yields, costs, and benefits. These parameters provided the quantification needed for the analysis. Development of these parameters is discussed in Sections II-IV of this appendix.

With this framework, FORPLAN was able to determine the mix of prescriptions which optimized the desired objective. Since cost efficiency was an important aspect of the analytical requirements, this objective was generally specified as the "maximization of Present Net Value."

Different ways to address and solve selected combinations of problems had to be found because the planning problems contained numerous and often competing aspects. These combinations were defined by specifying objectives which limited the:

- prescriptions to be considered,
- output levels desired or permitted,
- acreages (where necessary to achieve a particular result),
- or prescriptions allowed in combination.

Objectives stated in this fashion became FORPLAN modeling constraints. The constraints provide the framework or limits within which FORPLAN must operate to determine a solution.

The solution is usually expressed in terms of the number of acres allocated by analysis area to each management prescription. A schedule of outputs is the result of applying those prescriptions over time. The allocation is translated (i.e., aggregated) into management areas which have a unique theme of management. Using FORPLAN also allows the Forest to qualify the trade-offs of the issues in the planning problems by examining the differences in inputs and outputs, and the overall present net value of different solutions.

The following FORPLAN program set was used to analyze all ANF plan alternatives and benchmarks:

FORPLAN, Version 2, Release 4.
FORPLAN, Version 2, Release 9.

The FORPLAN system is maintained at the USDA Fort Collins Computer Center (FCCC), Fort Collins, Colorado, and is comprised of programs to generate the matrix, solve the linear algorithms, and produce reports. The UNIVAC Functional Mathematical Programming System (FMPS) is used to solve the linear program and is also maintained on the FCCC UNIVAC 1100 mainframe computer.

B. Analysis Process

1. Analysis Prior to FORPLAN

In order to develop a FORPLAN model that was reasonable in size, that could be interpreted and understood, and yet enable us to analyze the planning problems, numerous assumptions, analysis, and decisions were made prior to actually running the model. Many of these assumptions and decisions were needed in order to define analysis areas, prescriptions, standards and guidelines, and other considerations which were basic input needed to develop the model. These pre-FORPLAN decisions often had the effect of limiting the range of choice or options that were available in the model, but we decided they were necessary to hold the model's size and cost to a reasonable and justifiable limit [commensurate with the resource]. Since FORPLAN was the primary analysis tool to assure cost-efficient alternatives, pre-FORPLAN decisions that had potential impacts on cost-efficiency were analyzed in more detail.

We completed major analysis and made decisions prior to FORPLAN modeling in the following categories:

Limited Choices of Management Prescriptions on AA's Prices
Analysis Area Delineators
Non-FORPLAN Activities/Outputs
Standards and Guidelines
Determination of lands suitable for timber production
Timber prescription economic analysis

a. Limited Choices of Management Prescriptions on AA's

We completed analysis in four areas which resulted in limiting options for management prescriptions:

Options for Management Prescription 4
Final harvest timing options in the regenerated timber yield tables
Allocation of Management Prescription 8

For complete definitions of management prescriptions, see the Forest Plan.

1) Options for Management Prescription 4

We contracted a study (Strauss and Bowersox, 1982) to determine the anticipated costs, yields, and stumpage values we could expect from planting various species of conifers on various sites for the Allegheny National Forest. We also discussed the subject of planting significant acreages to conifers with the area's forest industry, and they showed little interest in a major conifer planting program. Based upon the conclusions of financial opportunities in Strauss' study, the uncertainty of markets, and lack of industry interest, we decided to limit the choice of Prescription 4 to 46,000 acres of the ANF:

- 20,000 acres of low stocking AA's,
- 16,000 acres of low site-index oak AA's, and
- 10,000 acres of the existing conifer stands.

Much of the acreage in these categories was identified in Strauss' study as providing the highest PNV opportunity if converted to conifers.

2) Final Harvest Timing Options in Regenerated Timber Yield Tables

When we began constructing the timber yield tables for FORPLAN, we wanted to have every age as a final harvest choice in regenerated yield tables. Because of the model size limitations and FORPLAN run cost-efficiency, we eliminated every other age (decade) as a potential final harvest timing option in the regenerated timber yield tables. Subsequently, FORPLAN model size limits were increased which allowed us to enter every age as a timing choice.

We made two FORPLAN runs to evaluate the effects of entering versus not entering the additional timing choices. We ran the Max PNV Benchmarks with and without the increased timing options and found:

- insignificant differences in total PNV,
- insignificant differences in harvest volumes in the early decades, and
- significant savings in FORPLAN computer costs in the run with "every other age" as an option.

The ID Team decided to perform the benchmark and alternatives analysis using every other age as final harvest timing options in the regenerated yield tables. No impacts on the cost-efficiency analysis were expected, but major computer cost savings occurred.

3) Allocation of Management Prescription 8 (Special Areas)

Because of their national or regional significance, we considered only management prescription 8 for:

- Tionesta Research Natural Area
- Kane Experimental Forest
- Tionesta Scenic Area

The Heart's Content area was considered only for prescriptions 8 and 5.

Because of their relatively small size, allowing other prescriptions would not significantly change results of the cost-efficiency analysis.

There are no intensity choices available within Management Prescription 8.

b. Prices

Prior to developing benchmarks and alternatives, we performed a sensitivity analysis and made decisions potentially affecting resource prices in two important areas:

- Real Price for Timber Outputs
- Assigned Values of RVD's and WFUD's

1) Real Prices for Timber Outputs

It was suggested that the Forest's assumptions on future real price changes would be a significant factor in establishing the economic optimum schedule and allocation. To evaluate this, the Forest analyzed historical trends in real prices for lumber over the last two decades for each species on the Allegheny National Forest (source: Hardwood Market Report, Appalachian Hardwood Section). Some species

showed significant increases while others showed significant decreases. We then grouped the species in the approximate proportions that they occur in our AA delineators, and found that Allegheny Hardwood (more than 25% cherry, ash, and poplar stocking) and high site oak analysis areas reflected a slight real price increase while Northern Hardwood (less than 25% cherry, ash, and poplar stocking) prices decrease. We decided not to include these calculated real price trends in our FORPLAN Analysis for 2 reasons: (1) the prices we used are an average of prices in the Appalachian Region, and may not accurately represent local trends and (2) Economists we consulted were skeptical that the trends we observed would continue. See the planning record for details of the analysis.

We considered using downward sloping demand. Neither results of the analysis of real prices, nor our discussions with the local forest industry suggested that downward sloping demand should be used within the range of harvests in our benchmarks and alternatives.

We decided not to vary the real prices of any species and not to use downward sloping demand.

2) Assigned Values of RVD's and WFUD's

In addition to the assumption on future stumpage prices, it was thought that the values assigned to the non-market outputs would be important in establishing the most efficient schedule and allocation. Since the assigned market values were not based on local transaction data, we tested the sensitivity of FORPLAN solutions to various levels of assigned values for RVD's and WFUD's. We made a variation on the Max PNV benchmark run using fifty percent of the RPA assigned values for WFUD's and RVD's. Allocations of the general management prescriptions and output levels did not significantly change between the runs but the selection of prescription intensities changed significantly. The Max PNV run chose all high investment intensities for recreation and wildlife, and the run which reduced assigned values selected nearly all low investment intensities. See the planning records for more detail of this analysis.

Because the allocation of general management prescriptions did not change significantly, we decided not to pursue local determination of value for non-market outputs. We used the 1985 RPA values for WFUD's and RVD's.

c. Analysis Area (AA) Delineators

To address ICO's and meet the cost-efficiency requirements of NFMA in our analysis, we initially thought we would require several more AA delineators than we eventually used in the analysis. Our first attempt to map AA's resulted in over 400 analysis areas. See the planning records, particularly the ANF's Sample Technical Package, for a description of the cost-efficiency analysis completed to assist in AA development.

Through a process using prototype models, early benchmarks, sample mapping their results, and analysis of the runs, we eventually used 96 AA's for the analysis. We believe this set of delineators provides an adequate representation of the land base to meet NFMA cost-efficiency requirements.

See III.C. for a discussion of AA development prior to FORPLAN.

d. Developed Recreation

Because of the specific spatial requirements of the developed recreation facilities, we did not include them in the FORPLAN model. Developed recreation strategies were determined through an iterative process including public involvement. The strategies range from providing small rustic recreation sites scattered across the Forest to an emphasis on highly developed resorts around the Allegheny Reservoir. Costs, outputs, and present net values were calculated for the developed recreation facilities selected for each alternative and added to FORPLAN results. The combination of facilities with the highest PNV was added to the benchmark results.

e. Determination of Lands Suitable for Timber Production

1) Land Suitability

Before beginning the FORPLAN analysis, we determined which lands were tentatively suitable for timber production in accordance with 36 CFR 219.14. First, all lands meeting the definition of forest land in 36 CFR 219.3 (land having or formerly having had at least 10 percent tree cover and not currently developed for non-forest use) were initially considered as suitable. With this definition a total of 30,866 acres of water, system roads, small wildlife openings, and rights-of-way are non-forest land. Next, all land designated by Congress, the Secretary, or the Chief for purposes that preclude timber production were classified as not suited (15,621 acres). In the final categories, the Allegheny National Forest has 450 acres of forest land not producing crops of industrial wood, 450 acres physically not suited for timber production, and zero acres with inadequate information concerning responses to timber management practices. The remaining acres are suitable for timber production and subject to FORPLAN analysis. Table B-1 displays the acres in each category.

Table B-1 Timber Resource Land Suitability

Classification	low rec/wl Acres
1. Water	8,305
2. Non-Forest Land[1]	22,561
3. Forest Land	479,664
4. Forest Land Withdrawn from Timber Production	15,621
5. Forest Land Not Producing Crops of Industrial Wood	0
6. Forest Land Physically Not Suited	
Irreversible Damage Likely to Occur	450
Not Restockable Within 5 yrs.	450
7. Forest Land-Inadequate Information[2]	0
8. Tentatively Suitable Forest Land (Item 3 minus Items 4, 5, 6, and 7)	463,143

1 Acres in this category vary by alternative. The number displayed is for this current situation

2 Lands for which current information is inadequate to project responses to timber management.

2) Oil, Gas, and Mineral Development Timber Output Reduction

Another consideration on the Allegheny National Forest in determining acres of land suitable for timber production is the acreage removed from timber production by new and existing oil and gas development. Section IV.B.2. explains the demand scenario for oil and gas on the Forest.

Demand estimates will include not only the number of new wells, but also the new Acres Disturbed and new Acres Impacted in both High and Low Intensity developments. Acres Disturbed is defined as the acres actually cleared for well sites, roads, and related facilities, and indicates acreage temporarily taken out of timber production. Acres Impacted is the area within an oil/gas development plus a 200' surrounding perimeter where other resources or activities (wildlife, recreation, etc.) may be affected. Generally, one well and its road averages about 3/4 Acre Disturbed and Five Acres Impacted. Existing oil/gas wells and production are also part of demand and are included in the FORPLAN runs.

Analysis Process

Oil and gas development is scattered throughout the analysis areas, taking land out of timber production where it occurs. Since it is so scattered, we have handled the timber production reduction by reducing timber volumes produced on each acre by a factor calculated from the forest-wide amount of oil and gas development land clearing, both existing and new. Under the High Demand scenario, this is a total of 32,684 acres cleared over 15 periods. Table B-8 shows the steady state reduction factors we used for each management prescription. The factor gradually changes over time until it reaches the number shown.

f. Timber Prescription Economic Analysis

The Forest Planning Regulations (36 CFR 219.14) require us to analyze timber resource land suitability. There are several stages to this analysis. The first stage (219.14(a)) identifies lands not suited for timber production. The results of this stage were presented in Section III.B. of this appendix. For lands other than those that were identified as not suited, an assessment of the costs and benefits for a range of management intensities for timber production had to be made (219.14(b)). This assessment, identified below, includes only the direct costs and benefits of timber production. The third stage (219.14(c)) consists of identifying lands which are not appropriate for timber production in order to meet objectives of the individual alternatives being considered. The results of this third analysis are summarized in Table 4-25 of the Final EIS.

Before we began our formal analysis process, we completed an economic analysis (known as the Timber Financial Analysis) of all of the timber management prescriptions we intended to use in FORPLAN. First, we identified the costs and benefits related to timber production for each prescription. The costs we included are the element E costs displayed in Table B-10. The benefits are those displayed for element E in Table B-12, except we did not include the Big-Game WFUD Benefits. Next, we calculated the present net value of each timber intensity and each timing option. Present net value equals the excess, over the 150-year planning horizon, of discounted benefits less discounted costs. Those timber management intensities which yield a positive PNV show direct benefits from timber production which exceeds direct costs.

As a result of this analysis, we now know which analysis areas yield positive returns for timber management and the timber management strategy which yields the highest PNV on each. The planning records contain detailed information on the results of the timber financial analysis for each analysis area.

Here is brief summary of Timber Financial Analysis Results for Management Areas 1, 2, 3, 4, 6.1, 6.2, and 6.5. It shows that Management Areas 3/6.1 yield the highest present net value (PNV) for timber management. The PNV for timber harvesting in Management Areas 3/6.1 is positive for all timber management intensities on all analysis areas except the following:

all timber harvesting on low stocked analysis areas areas which are older than 30 years;

thinning intensity on Northern hardwoods, 1-30 age class, with medium stocking;

precommercial thinning intensity on high site oak analysis areas, which are in the 1-30 age class;

all timber managment intensities on low site oak for the 1-30 age class.

The PNV's for Management Area 1 are negative on all analysis areas.

The PNV's for Management Area 2 are positive only on the following analysis areas:

all Allegheny hardwoods;

all Oak analysis areas older than 70 years;

all high site oak on the gentle slope LTA's in the 31 to 70 age classes;

all Northern hardwood analysis areas older than 70 years;

all well-stocked Northern hardwood analysis areas in the 31 to 70 age classes.

Management Area 4 is an option on low site oak and low stocked analysis areas. The PNV's for timber management are positive on all low site oak analysis areas, except the 1-30 class, and are negative on all low stocked analysis areas.

Management Area 6.2 was applied to all but low stocked analysis areas. Where applied, PNV's for Management Area 6.2 are always negative on analysis areas with the following characteristics:

all Northern hardwoods, 1-30 age class, with medium stocking;

all high site Oak, 1-30 age class, on plateaus;

all low site Oak, 1-30 age class.

All other analysis areas have positive PNV's for Management Area 6.2.

The PNV's for timber harvesting in Management Area 6.5 are negative for the following analysis area characteristics:

all low stocked analysis areas;

all Northern hardwoods with medium stocking;

all Northern hardwoods with high stocking greater than 90 years.

The remaining PNV's are positive with the greatest PNV being $94 per acre on medium and high stocked Allegheny hardwoods in the 1-30 year age class.

The NFMA regulations 36 CFR 219.14(b) require the Forest to "...identify the management intensity for timber production for each category of land which results in the largest excess of discounted benefits less discounted costs...". Table B-2 makes this summary by analysis area grouping. The only analysis area grouping always having a negative PNV for timber management is low stocked Allegheny and Northern hardwoods on plateaus and gentle slopes in the 31-90 age class.

Table B-2 Management Intensity Having Greatest PNV Per Acre (Discounted Timber Benefits minus Discounted Timber Costs) By Analysis Areas Groups

LTA	Timber Type	Age	Stocking Site Index	Rx	Intensity	PNV ($)
P,G	AH/NH	<30	<45	3	F-IF	31-32
P,G	AH/NH	31-90	<45	6.5	Uneven-aged	-11
P,G	AH	<30	45-74	3	FH-FH	97-99
P,G	AH	<30	>75	3	2PIIF	150-156
P,G	AH	31-110	45-74	3	FH-FH	230-1071
P,G,S,B	AH	31-70	>75	3	IIF14P	284-670
S,B	AH	71-110	>75	3	FH-FH	602-1267
P,G	AH	71-90	>75	3	FH-FH	615-623
G	AH	>90	>75	3	IIF14P	1320-1974
P,G,S,B	AH	All Ages	>45	3	FH-FH	2-865
P,G	Oak	<30	>65	3	FH-FH	12-13
P,G*	Oak	31-50	>65	3	FIIF2J	94-96
P,G,S,B	Oak	51-90	All Sites	3	FH-FH	105-572
P	Oak	91-110	>65	3	FH-FH	520
P,G,S,B*	Oak	>91	>65	3	4JFIIF	863-1656
G	Oak	<30	<65	6.5	Uneven-aged	8
G**	Oak	>111	<65	4	Red Pine	896

* Conversion from Oak to Allegheny hardwoods
** Conversion from Oak to Red Pine

PNV's by individual management intensity and analysis area are in the process records.

2. Use of FORPLAN

Two important aspects of the Forest Plan analysis are the assignment of management prescriptions to land areas and the resource output scheduling. FORPLAN is capable of simultaneously determining both the allocation and the schedule. The FORPLAN model was designed so that each problem statement in Appendix A could be analyzed.

The first problem statement asks what mix of recreation opportunities and setting should be provided on the ANF to best satisfy the diverse preferences of recreationists. Each prescription in the FORPLAN model was given a per-acre coefficient which calculates the RVD's per acre by ROS class. Each RVD was valued based on it's ROS class and the 1985 RPA values for RVD's. This allows modeling of RVD's or acres by amount or proportions in each ROS class or ROS class.

The second problem statement addresses the concern of what quantity of timber volume the ANF should produce. Characteristics in the FORPLAN model which can be used to address this problem are: 1) analysis area identifiers, such as timber type, stocking, and age, 2) management prescriptions, both even and uneven-aged, 3) multiple timber outputs of hardwood sawtimber and pulpwood and softwood sawtimber and pulpwood, and 4) variations in timber values by all of the above. By placing restrictions on various combinations of the characteristics mentioned above the FORPLAN model can be used to evaluate the alternative methods of addressing the problem statement.

The third problem statement to be addressed in the planning process is how the ANF integrates oil and gas operations with management of surface resources while minimizing environmental effects. Five management prescriptions estimating the effects on activities, outputs, costs, and returns on areas of high OGM development were developed and entered into the FORPLAN model. Each AA was required to receive a certain number of acres of these goals based on estimated OGM development and the potential of OGM development on each AA. Using FORPLAN the effects of various levels of OGM development on the ANF could be measured.

The final problem statement to be addressed is the amount of Wilderness the ANF should recommend. A management prescription was developed to estimate the costs and yield of managing an area as Wilderness. This management prescription can be applied on any acre or acres of the ANF and effects of Wilderness management can be evaluated.

3. Analysis in Addition to FORPLAN Analysis

a. Transportation Planning

An intensive transportation planning analysis was done after we completed the FORPLAN analysis. In order to ensure the cost-efficiency requirements of NFMA, the FORPLAN results involving allocation and scheduling of timber harvests are needed before we develop the transportation plan.

b. Small, Non-Game, and Fish WFUD's

Small and non-game WFUD's and fishing WFUD's values were not included in FORPLAN because of the complexity of modeling their yield responses to management practices, and their relative numbers compared to big-game WFUD's. Amounts of small and non-game WFUD's were calculated after the FORPLAN runs were made for each benchmark and alternative.

c. GA and Program Management

GA and program management were not included in the FORPLAN analysis because their size depends upon the levels of goods and services produced in the resource elements. Cost estimates, then, were developed for GA and program management as non-linear functions of the resource elements' levels of activities and outputs. See the planning record for details on these cost estimates.

d. Spatial Feasibility Analysis

FORPLAN analysis does not account for the spatial requirements or distribution needs of all activities modeled. During the early benchmark runs some spatial feasibility tests were made on the major prescriptions. From this, adjustments were made to the FORPLAN model to account for some spatial needs. To further insure spatial feasibility, field personnel reviewed the draft management area maps of each Alternative and made final adjustments.

e. Management Area 6.1 Wildlife Element Timber Harvests

Following the review of the public comments on the draft documents, we adjusted management prescription 6.1. The adjustments more clearly explain and model those vegetative treatments, which will benefit featured wildlife species. First, we more clearly discussed vegetation manipulation in the standards and guidelines for Management Area 6.1 in the Forest Plan. Second, the draft documents did not include any estimate of timber activity or yield which would result from final harvests, thinnings, or selection cuts. We calculated these outside of FORPLAN for Management Area 6.1 using average per acre FORPLAN costs and yields from Alternative D as a guide. Then we added these to the forest-wide summaries in all of the planning documents and to the summary for Management Area 6.1 in the Forest Plan.

C. Identification of Analysis Areas

Analysis areas (AA's) are the basic land allocation unit within FORPLAN. Selection of the set of AA's eventually used in the analysis evolved through an interdisciplinary effort. The initial list of delineators chosen by the ID Team resulted in over 400 AA's. Through a series of aggregations of small AA's (100 acres) and reducing the number of delineators to only those judged most significant to the analysis problems, the ID Team settled on 96 analysis areas. The final set of delineators evolved through the actual development of prescriptions and subsequent analysis of initial FORPLAN test runs and benchmarks.

Delineators were changed or deleted if they were not used in prescription cost or yield development, if their effect on the results were judged insignificant, or if the problem they related to could be modeled more efficiently another way.

Table B-3 lists the final set of delineators and their acreages.

Table B-3 Final Analysis Area Delineators

Delineator	Acres	% of Land Base
Land Type Groups		
Plateau	192,000	38
Moderate Slope (less than 40%)	275,000	55
Steep Slope (greater than or equal to 40%)	27,000	5
Bottomland	8,000	2
Timber Types		
Allegheny Hardwoods	309,000	61
Northern Hardwoods	92,000	19
Oak	102,000	20
Timber Age		
1-30 years	23,000	5
31-50 years	31,000	6
51-70 years	228,000	45
71-90 years	190,000	38
91-110 years	27,000	6
111+	3,000	1

Table B-3 (con't) Final Analysis Area Delineator

Delineator		Acres	% of Land Base
Timber Stocking/Site Index			
Allegheny and Northern Types			
Low Stocking	(0- 44%)	20,000	4
Medium Stocking	(45- 74%)	64,000	13
High Stocking	(75-100%)	317,000	63
Oak			
Low Site Index	(<65)	16,000	3
High Site Index	(≥65)	86,000	17

Land Type Groups

In 1973, Wayne E. Humbert (U.S. Forest Service) described, defined, and mapped land-form groups within the Allegheny National Forest. These land form or landtype groups include Plateaus (P), Slopes (S), and Bottomlands (B). (General Soil Inventory of the Allegheny National Forest - Humbert, 1973)

Land type groups represent broad ecological characteristics. Thus, some cost and yield differences caused by ecological factors will be represented in the model.

When overlaying delineators to form analysis areas, this layer was the base layer to which all other delineators were added. Boundaries of the land type groups will not be altered when other layers are added.

The slope land type group is separated at 40 percent because this is the point where special harvesting and roading precautions need to be employed and visual quality is typically sensitive.

Timber Types

Allegheny hardwoods, Northern hardwoods, and Oak represent over 95 percent of the forest. The remaining types, such as conifer and aspen because of their low market values and small acreages, will be treated as inclusions in the three timber types.

The Allegheny hardwood type is actually a subset of the Northern hardwood type with greater than 25 percent component of cherry, ash, and tulip poplar (CAP's). Because of their high commercial value, the percent CAP's is an important variable in estimating the yield and value of Allegheny hardwood stands.

Timber Age

Six categories will be used to identify beginning ages of the analysis areas. Age categories were selected using two criteria:

- delineate areas where treatments may be options early in the planning horizon versus those where treatments would be options later in the planning horizon.
- use age categories which delineate areas of differing amounts of wildlife user days.

Zero to thirty years identifies young growth where no commercial treatments take place early in the planning horizon, and provides for significant yields of certain wildlife species. Thirty-one to fifty describes areas where generally there are no treatments. Fifty-one to seventy, seventy-one to ninety; and ninety-one to one hundred ten identify AA's where various thinning and final harvest options may take place as well as various changes in wildlife species and yields. The sixth age class of 111+ identifies areas for final harvest as well as defining "old growth" for wildlife yield estimation.

Timber Stocking

High and medium stocking levels identify Allegheny and Northern hardwood analysis areas where thinning prescriptions will be options and low stocking identifies failed clearcuts and savannah stands where planting will be an option. Stocking also explains significant stumpage value differences.

Site index is used to separate oak stands into two levels that relate to significant differences in value.

The following sections summarize the major factors affecting the delineation.

1. Economic factors

Significant changes in value influenced the selection of the timber type and stocking delineators.

Major increases in costs based on topography of certain common management practices, such as road building and sale prep, influenced the choice of LTA slope delineator categories.

2. Inventory and Data Reliability

Data reliability generally had little effect on the final selection of analysis area delineators. Data availability though did effect our initial choice of delineators. The ID Team searched for a delineator showing where the timber regeneration problem of fern and striped maple existed. Mapped forest-wide information in this understory problem was not available. We have recognized this as a priority data collection need for future plan revisions.

In attempting to identify a basic capability unit or resource layer that relates to biological response, the ID Team sought an Ecological Land Type (ELT) classification system for the Forest. A study in 1981, Ecological Land Typing and Field Measurement Analysis indicated that existing data could not be used to develop a meaningful ELT. The ID Team therefore chose to use a broader ecological classification level - the land type group. At this time the biological response (yields and values) is more predictable based on the type, stocking, and age delineators.

3. Computer Model Characteristics

Limits in FORPLAN software and FCCC hardware had an influence on our delineation of AA's. The model actually allowed more detail than the ID Team desired. If anything, it was the cost of making runs that had the greatest effect. Since cost increases as the number of analysis area and prescription combinations increase, the ID Team reduced the number of analysis areas to the fewest possible.

Also, our ability to comprehend and analyze the results improved with fewer analysis areas and prescription combinations. So it was cost and human skills that influenced particularly the total number and definition of analysis areas and not the model requirements.

4. Reporting Needs, Policy Constraints

These factors did not effect the delineation of analysis areas. Such needs as reports by District and evaluation of tradeoffs for each RARE II area will be done from the results of each run. Such spatial information was not necessary in the model to address the planning problems.

5. Spatial Factors vs. Biological

The spatial criteria of size and distribution influenced the final delineation of AA's. The smallest individual areas to be mapped were capability units. These areas were defined as being at least 20 acres in size and were aggregated into forest-wide AA's containing a minimum of 100 acres. Small inclusions such as aspen, conifer, steep slopes, spring seeps, riparian areas are a common characteristic of many analysis areas. These inclusions have been accounted for in the yield tables and cost calculations as well as in the standards and guidelines.

D. Identification of Prescriptions

1. Overview

a. Management Prescription Definition

National Forest Management Act Regulations define management prescriptions as "management practices selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives." Generally, a management prescription is a set of treatments or practices needed to create a desired forest condition and produce specified outputs, while also protecting all resource values to established standards.

b. Criteria Used in Developing General Prescriptions

During the development and review of the general Management Prescriptions, the Allegheny National Forest Interdisciplinary Team and Management Team (District Rangers and Staff) prepared and revised the general Management Prescriptions using the following criteria:

1) Does the prescription adequately communicate the long-term desired land condition?

2) Will the prescription provide the technical management direction needed by a land manager to achieve the stated future condition?

3) Is the prescription written specifically enough for us to develop standards and guidelines consistent with its overall purpose and intent?

4) Does the prescription provide enough detail to enable us to develop FORPLAN costs and yields? Have we identified all of the decision variables and significant MIH activities required to produce the desired land condition?

5) Has the Allegheny National Forest responded to all of the Regional Prescriptions which are appropriate here?

6) Do the prescriptions provide a wide enough range of land conditions for us to adequately respond to the Problem Statements and the Issues, Concerns, and Opportunities included therein?

c. Description of the Prescription Development Process

The Allegheny National Forest established an Interdisciplinary Team (ID Team) to develop the management prescriptions. The permanent Supervisor's Office (SO) members of the team were all assigned full time to Land Management Planning. This group made the first draft of the general management prescriptions. Next, the Forest established an ID Team composed of four District personnel. This team assembled periodically thoughout the process when specific field input was required for the prescriptions. Staff specialists periodically provided additional input into the prescription development process.

The management prescription development process began with the ID Team reviewing the planning problems to determine the different outputs, conditions, or other benefits the public had expressed a need for the Allegheny National Forest to provide. Basically this consisted of a review of the Problem Statements and the Issues, Concerns, and Opportunities contained therein. Following this determination, the ID Team developed a set of potential land conditions to address or respond to the Issues, Concerns, and Opportunities within each planning problem. The description of the possible land conditions included such items as desired timber types, road densities, silvicultural systems, recreation opportunities, and outputs produced or emphasized.

After describing each desired condition response for each planning problem, the ID Team grouped the desired conditions which emphasized the same outputs, provided the same land conditions, responded to the same issues and concerns, or provided a similar response to conditions described in the Regional Management Prescriptions. The resulting set of desired land conditions became the Allegheny National Forest general Management Prescriptions.

Identification of Prescriptions

The ID Team then began to develop the Standards and Guidelines for each Management Prescription through consultation with the Staff Specialists and members of the District ID Team. These Standards and Guidelines (S&G's) provide the specific resource direction needed to obtain the desired conditions in the management prescriptions and to implement each prescription on-the-ground, and they help establish the basis for the detail included in the FORPLAN prescriptions. Finally, they provide much of the direction needed to ensure projects will meet the minimum management requirements specified in 36 CFR 219.27. Section VI.B. of this Appendix provides additional detail regarding the Minimum Management Requirements. The SO and District ID Teams had to determine the most efficient and effective method to achieve these requirements and used one or a combination of the following techniques:

- Standards and Guidelines
- Constraints
- Project Development
- Monitoring
- Analysis of spatial feasibility of prescriptions
- FORPLAN analysis

For those MMR's most efficiently dealt with through the FORPLAN analysis or the Standards and Guidelines, the ID Team relied heavily on both our professional experience in dealing with these requirements as well as available research, particularly research completed by the Northeast Forest Experiment Station in Warren, Pennsylvania. The following is a brief summary of the criteria we employed to deal with MMR's in the prescriptions:

- Base the response on the most cost-effective method of meeting the objective.
- Provide some choice in the FORPLAN model related to MMR's. For example, activities (and their associated costs) required to meet MMR's vary between analysis areas, though there is no variation within a given prescription on a specific analysis area. Activities required to meet MMR's may also vary by prescription (2 has different activities to meet MMR's than does 3). FORPLAN then picks the most efficient prescriptions for each alternative.

- The specific timber management activities included in the prescriptions to meet MMR's are based on research conducted on the Forest as well as professional experience. These activities vary by timber type.
- Many of the MMR's are met through MIH coordination activities for projects based on professional experience. Recreation and wildlife coordination activities for timber sales, for example, include the most effective and cost-efficient methods developed to date.

Each general prescription also contains different management intensity or investment levels and different timing options for the scheduling of management activities. These provide FORPLAN with a wide range of scheduling choices. The management intensities allow us to respond to increased resource demands and change budget levels without having to make major changes in the general prescription assignments. Section III.D.1.d. provides additional detail regarding intensities and timing options.

Once the ID Team completed the initial set of Management Prescriptions and Standards & Guidelines, they presented them to the ANF Management Team and the Regional Forester for approval. Both review levels recommended some changes. The District ID Team then completed the revisions. Since the Management Prescriptions respresented the range of choice to respond to the issues and concerns within the planning problems, the Forest next presented them to the local public for their review and comment. Following these reviews the ID Team and the Staff Specialists completed a final revision to add more detail to the Standards and Guidelines which would aid in more completely describing the desired land condition, activities, or outputs expected. The Forest Plan contains the full set of the general Management Prescriptions (2, 3, etc.) and their respective Standards and Guidelines.

d. FORPLAN Prescription Development Process

The general Management Prescriptions provided the framework for developing the FORPLAN prescriptions. The FORPLAN prescriptions contain much more detail than the general prescriptions. They reflect many of the specific activities required to produce the desired land condition and specific outputs called for by the general

prescription. Those activities/outputs which we could not model in FORPLAN, we added through analysis completed outside FORPLAN. In order to provide FORPLAN a wide range of options to meet the scheduling requirements and analyze cost-efficiency, the ID Team developed specific FORPLAN prescriptions within each general prescription which reflected different management intensities and different timing choices. The ID Team, however, did not include all Management Prescriptions in the FORPLAN model. The following discussion provides additional detail.

1) Criteria Used to Select Prescriptions to Model in FORPLAN

The ID Team did not include prescriptions for riparian areas, developed recreation, or special areas in the model. The following questions or criteria played an important role in making this decision.

- Would it significantly increase scheduling options or improve cost-efficiency analysis in the FORPLAN model?
- Does the prescription apply to small acreages which have significant spatial requirements, or site specific costs and yields?
- Can we exclude the prescription and, thereby, reduce FORPLAN analysis costs without significantly reducing the quality of our analysis?
- Does the prescription apply to a wide range of Analysis Areas (AA's) or to only a select few? Will we allow the prescription to be chosen on large acreages encompassing many AA's?

2) Implications of Including/Excluding Prescriptions in the ANF FORPLAN Model

We have included most of our prescriptions in the FORPLAN model. This provides a wide range of options for scheduling choices on an AA and between AA's at various levels of investment. Prescriptions for riparian areas, developed recreation, and special areas

will be analyzed outside of FORPLAN and added to the FORPLAN results. Non-FORPLAN analysis works best for these areas since their acreages are small and spatial arrangement is critical.

3) Timing Choices

a) Timber

The timber timing choices available for regeneration harvests in the FORPLAN prescriptions are within the range defined as the point where the Analysis Area reaches 95 percent of culmination of mean annual increment (CMAI) and a point which provides old growth conditions. All even-aged management prescriptions (except aspen management) have a final harvest option at least as old as 150 years. For those alternatives where we examined the effects of long rotations, the oldest rotation age for each analysis area is 200 years. Aspen is an exception to the above. It may be harvested before 95 percent CMAI in order to provide optimum grouse habitat, and we have not carried it past 70 years.

In order to keep the model from becoming unnecessarily large and expensive to run, we deleted every other rotation age in the yield tables for regenerated vegetation, but we kept every one in the yield tables for existing vegetation. This decision was based on our analysis which showed no significant changes in PNV or the allocation when we used every other rotation in the regenerated stand. Detailed findings of this analysis can be found in the planning records in a 1920 memo, dated February 13, 1984, entitled "Timing Options in FORPLAN".

To provide adequate opportunities for the thinning choices, many analysis areas which can support a thinning or selection cut in the first decade also have a prescription which delays that first entry thinning until period 2.

Selection cuts occur on a 20-year cycle for every intensity in management prescriptions 2 and 6.5. The age of the first entry is 60 years, with analysis areas older than 60 years requiring a series of cuts 20 years apart to bring them into an uneven-aged condition. In management prescription 2, each analysis area has the option of waiting until age 70 for the entry of the 20-year cycle.

Table B-7 shows the rotation age ranges in FORPLAN for timber types, and Table B-6 displays initial entry ages for thinnings and selection cuts.

b) Wildlife

Timing choices for wildlife are an integral part of the intensities (described below). Wildlife habitat development occurs in different amounts and at different rates based on the level of intensity selected.

c) Recreation

Recreation timing options relate to the decade when the trail building occurs. The Low Intensity includes no new trails. The Medium Intensity calls for an equal number of miles of new trail in each of the next four decades. The High Intensity reflects equal amounts of new trail construction in decades 1 and 2, but 20-30% more in decades 3 and 4.

4) Management Intensities

Management intensities within each prescription provide additional options for cost-efficiency analysis in the FORPLAN model. Intensities represent the combination of investment levels, timing of investments, and choice of practices to achieve different levels of output quantity and quality within the theme of a Mangement Prescription. Desired land conditions and output levels for a prescription are expressed as a range on a continuum between upper and lower acceptable bounds. Points on this output continuum require different investment levels which we have defined as management intensities. Intensities then have a direct effect on production levels and the quality of the product or experience.

Because each prescription has the potential to produce a wide range of intensity options, we limited the choices in the model to a practical number. We narrowed the number of intensities using an interdisciplinary process. Here, we examined trade-offs, cost-effectiveness, similarity to other choices, our knowledge of the resource response to investments, and the potential significance of the prescription on the Forest. The result was that we modeled numerous intensities for some prescriptions and only one for others (see Table B-5 for additional details).

a) Timber Intensities

First, we established those activities required in the prescriptions to meet Minimum Management Requirements (MMR's). The activities are based on research, cost-effectiveness, and our professional experience with regenerating stands. Each intensity within prescription 3, for example, includes the activities we have found to be most cost-effective and biologically sound in regenerating each timber type. We have not included alternative techniques in the model for regenerating a particular timber type managed under prescription 3.

Each prescription on each timber type which calls for even-aged management includes an additional allowance for regeneration costs to cover a second round of regeneration activities on a small percentage of each acre where the first treatment fails to adequately regenerate the stand. These percentages are based on historical failure rates experienced on the Forest over the last few years.

Next, we established those timber management activities which we could logically vary to produce different management intensities on a given Analysis Area. These are basically the investments or activities which change the quantity or the quality of the yield on each acre. For Management Prescription 3, this resulted in the following general intensities:

- Intensities which include precommercial and commercial thinnings,
- Intensities which include commercial thinnings,
- Intensities which include only regeneration harvests (no intermediate treatments),

- Intensities which allow type conversion from oak to Allegheny hardwood,
- Intensities which provide for planting existing low stocked Analysis Areas with Allegheny hardwoods.

Table B-5 displays the timber intensities for each general prescription which we developed for each Analysis Area.

b) Recreation Intensities

We developed three intensities which vary by quantity and quality of trail building and dispersed recreation management.

- Low Intensity is defined as maintaining current investments. We would maintain the existing trail system and would not develop any new trails. This is the low end of the range described in the Standards and Guidelines.
- Medium Intensity is mid-way between Low and High Intensity. Equal amounts of trails are built in each of the first four decades.
- High Intensity is the upper limit of the range described in the Standards and Guidelines. We established the upper limit on trail densities for each prescription by examining the Recreation Opportunity Spectrum (ROS) class called for therein and determining the maximum trail density consistent with maintaining that ROS classification. Equal amounts of new trail construction occur in decades 1 and 2, and 20%-30% more in decades 3 and 4.

c) Wildlife Intensities

We developed three wildlife intensities, which vary by quantity and quality of wildlife habitat development. Our process records contain additional details.

- Low Intensity, as for recreation, maintains current investments with no new habitat development. The wildlife opening objectives for each management area are the following:
  Management Areas 1, 2, 4, 6.2 = 1%
  Management Areas 3, 6.1 = 2%

- Medium Intensity is mid-way between Low and High Intensity. All new wildlife habitat development occurs within the next 30 years. The wildlife opening objectives for each Management Area are the following:
  Management Areas 1, 2, 4, 6.2 = 2%
  Management Areas 3, 6.1 = 5%
- High Intensity conforms with achieving the upper limit of the featured species population range described in the standards and guidelines. These upper limits are consistent with those specified in recent research literature, modified slightly based on our professional knowledge of local conditions. All new wildlife habitat development occurs within the next 20 years. The wildlife opening objectives for each management area are the following:
  Management Areas 1, 2, 4, 6.2 = 3%
  Management Area 3 = 8%
  Management Area 6.1 = 9%

d) Recreation, Wildlife, and Timber Intensity Combinations

Combining the separate timber, recreation, and wildlife intensity options available for each general management prescription produces a wide range of multiple resource management intensities therein. For example, for management prescription 3 on a high site oak analysis area, High, Medium, or Low recreation can be combined with High, Medium, or Low wildlife and any of the four timber intensities. We limited them to a more workable number by merging the recreation and wildlife intensities into three intensities: High (HI), Medium (M), and Low (L). High includes the High Intensities for both recreation and wildlife, Medium includes the Medium Intensities for both, and Low includes the Low Intensities for both. It does not seem appropriate to include other combinations of the recreation/wildlife intensities (low recreation - high wildlife, medium recreation - low wildlife, etc.) since these types of resource uses are complimentary. Wildlife use is essentially another form of recreation use, and wildlife users occupy many of the developed and dispersed recreation facilities while using the Forest. So we reduced recreation/wildlife from 9 possible combinations down to three which we included in FORPLAN. We did not merge the intensities any further because we wanted

timber and recreation/wildlife to function independently in the intensity selection process. So FORPLAN can choose any of the three recreation/wildlife Intensities to go along with each of the timber intensities. For a hypothetical example, if prescription 3 has three recreation/wildlife intensities and five timber intensities, it will have 15 total intensity combinations. Table B-5 identifies the intensities available in the FORPLAN model for each management prescription.

e. Oil and Gas Development Intensities

Oil and gas development has two management intensities - High and Low. We have handled them a little differently than the recreation/wildlife/timber intensities; for OGM, the intensities differ at the broad prescription level. We developed five high intensity oil and gas development prescriptions after carefully examining the land condition and outputs called for in each of the rest of the prescriptions (1, 2, 3, 4, 5, 6.1, 6.2, 6.3, 6.4, 6.5, 7, 8, and 9.1). We have defined a high intensity of oil and gas development as one having five or more wells with a spacing of 450 feet to 1,000 feet between wells. Anything with less than five wells and with a spacing of more than 1,000 feet is low intensity development. If we felt we could still retain a significant portion of the general theme of the prescription in a high intensity oil and gas development, we developed a similar prescription but with a high oil and gas production emphasis (1.11, 2.21, 3.41, 4.01, 9.11). Each of these retains as much of the parent prescription's emphasis as possible. Low intensity development can occur in many of the other prescriptions.

So, how do the two OGM intensities relate to timber and recreation/wildlife intensities? In the management prescriptions which permit either low intensity or no oil and gas development (1, 2, 3, 4, 5, 6.1, 6.2, 6.3, 6.4, 6.5, 7, 8, 9.1), all of the timber and recreation/wildlife combinations implied on Table B-5 apply. In the high intensity OGM prescriptions (1.11, 2.21, 3.41, 4.01, 9.11), all of the timber intensities apply, but only the low recreation/wildlife intensity is valid. From experience we have found intensive recreation or wildlife management is not appropriate where oil production activities dominate the immediate environment.

f. Process Followed to Ensure an Adequate Range of Prescriptions

The previous Section III.D.1. (pages B-39 to B-42) discusses what the ANF did to ensure an adequate range of prescriptions.

2. Purpose, Criteria, and Assumptions for Each Category of Prescription

The following pages in this section contain a brief description of each general Management Prescription. These respond to the Regional Management Goals which have the same first digit.

Table B-5 displays a list of all the prescriptions and their management intensities.

a. Management Prescription 1

This prescription emphasizes providing early successional species of forest vegetation, primarily aspen, managed on a short rotation to increase hunting opportunities in a roaded environment.

1) Purpose

- Provide wildlife habitat though timber management which emphasizes producing small, early successional, hardwood trees for fiber or lumber on a 40-year rotation.
- Emphasize grouse and deer production.
- Provide a roaded natural recreation setting with all types of dispersed recreation opportunities, but particularly emphasizing hunting.

2) Criteria Assumptions, and Economic Considerations

- This prescription is a choice on all analysis areas where aspen stands now exist.
- Since we have a poor market for pulpwood products, prescription 1 includes both a commercial intensity (timber sale) and a non-commercial intensity (bulldozing) which can be used to regenerate the Analysis Areas.

b. Management Prescription 1.11

This prescription emphasizes providing early successional species of forest vegetation, primarily aspen, managed on a short rotation to increase hunting opportunities in a setting dominated by intensive oil and gas development.

1) Purpose

- Provide wildlife habitat though timber management which emphasizes producing small, early successional, hardwood trees for fiber or lumber on a 40-year rotation.
- Emphasize grouse and deer production.
- Emphasize hunting within a roaded natural recreation setting.
- Manage high intensity oil and gas development on outstanding, reserved, and USA mineral ownerships.

2) Criteria Assumptions, and Economic Considerations

- This prescription is a choice on all analysis areas.
- Since we have a poor market for pulpwod products, prescription 1.11 includes both a commercial intensity (timber sale) and a non-commercial intensity (bulldozing) for regenerating the Analysis Areas.
- Many forms of dispersed recreation are not compatible with high intensity oil and gas development.

c. Management Prescription 2

In this prescription the forest will generally have a continuous crown canopy consisting primarily of shade tolerant vegetation with interspersed small openings and associated wildlife.

1) Purpose

- Provide a continuous, forested scene through practicing uneven-aged management which will promote tolerant species and produce quality sawtimber.

- Feature wildlife species associated with shade tolerant vegetation, primarily songbirds and cavity nesting birds and mammals.
- Provide the opportunity for a variety of developed and dispersed motorized recreation opportunities in a roaded natural setting.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all analysis areas.
- Under 2, areas where the vegetation consists predominantly of intolerant species will gradually move toward a more shade tolerant species composition and lower timber values.

d. Management Prescription 2.21

This prescription emphasizes providing a forest with a continuous crown canopy broken primarily by the roads and openings associated with intensive oil and gas development.

1) Purpose

- Provide a continuous forested scene through practicing uneven-aged management which will promote tolerant species and produce quality sawtimber.
- Feature wildlife species associated with shade tolerant vegetation, primarily songbirds and cavity nesting birds and mammals.
- Emphasize hunting within a roaded natural recreation setting.
- Manage high intensity oil and gas development on outstanding, reserved, and USA mineral ownerships.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- Under 2.21, areas where the vegetation consists predominantly of intolerant species will gradually move toward a more shade tolerant species composition with lower timber values.

- Many forms of dispersed and developed recreation are not compatible with high intensity oil and gas development.
- Recreation and wildlife management will be Low Intensity.

e. Management Prescription 3

This prescription emphasizes providing a forest which is a mosaic of predominantly hardwood stands and associated understories that provide habitat for game and non-game wildlife species. Each stand will consist of trees of approximately the same age and height.

1) Purpose

- Provide a sustained yield of high-quality Allegheny hardwood and oak sawtimber through even-aged management.
- Provide a variety of age or size class habitat diversity from seedling to mature sawtimber in a variety of timber types.
- Emphasize deer and turkey in all timber types and squirrel in the oak type.
- Provide a roaded natural setting for all types of developed and dispersed recreation opportunities, with an emphasis on motorized recreation activities.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- Prescription 3 contains a wide variety of management intensities.

f. Management Prescription 3.41

This prescription emphasizes providing a forest composed of a mosaic of hardwood stands and associated understories that provide habitat for game and non-game wildlife species in a setting dominated by intensive oil and gas development.

1) Purpose

- Provide a sustained yield of high-quality Allegheny hardwood and oak sawtimber using even-aged management.
- Provide a variety of age or size class habitat diversity from seedling to mature sawtimber in a variety of timber types.
- Emphasize deer in all timber types and squirrel in the oak type.
- Emphasize hunting within a roaded natural recreation setting.
- Manage high intensity oil and gas development on outstanding, reserved, and USA mineral ownerships.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- Many forms of dispersed and developed recreation are not compatible with high intensity oil and gas development.
- Recreation and wildlife management will be Low Intensity.

g. Management Prescription 4

This prescription emphasizes providing a forest which is a mosaic of conifer stands and associated understories that provide habitat for game and non-game wildlife species. Most of the trees within a stand will be of the same size and age.

1) Purpose

- Provide a sustained yield of softwood sawtimber using even-aged management.
- Provide a variety of age or size class wildlife habitat diversity, from seedlings to mature sawtimber.
- Emphasize wildlife.
- Provide a roaded natural setting for all types of developed and dispersed recreation opportunities, with an emphasis on motorized activities.

2] Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on only 46,000 acres on low site oak Analysis Areas, low stocked Analysis Areas, and areas with large acreages of conifer stands. It calls for red pine or white pine (if the weevil problem subsides) on the medium to well-drained sites and spruce on the very poorly to poorly-drained sites. A study titled the Biologic and Economic Feasibility of Coniferous Timber Production Systems for the Allegheny National Forest (Strauss and Bowersox, 1982) determined medium and well-drained soils on these Analysis Areas provide the best opportunities for conifer production on the Forest. They yielded the highest soil expectation values. We added the poorly-drained sites since they are significant inclusions within the low stocked Analysis Areas. A second non-FORPLAN analysis report completed by the ANF timber staff (Hockinson, 1983) confirmed the results of the Strauss and Bowersox report with respect to the best sites to be planted.
- Prescription 4 is a choice on a small portion of the ANF (20,000 acres of low stocked, 16,000 acres of low site oak, and 10,000 acres of existing conifer stands or a total of 9% of the total Forest acreage). To keep analysis costs down, we restricted the number of management intensities to High, Medium, and Low for recreation/wildlife and a high intensity for timber management which includes numerous thinnings.

h. Management Prescription 4.01

This prescription emphasizes providing a forest composed of a mosaic of conifer stands with associated understories that provide habitat for game and non-game wildlife species in a setting dominated by intensive oil and gas development.

1) Purpose

- Provide a sustained yield of softwood sawtimber using even-aged management.
- Provide a variety of age or size classes for wildlife habitat diversity.
- Emphasize wildlife.
- Emphasize hunting within a roaded natural recreation setting.
- Manage high intensity oil and gas development on outstanding, reserved, and USA mineral ownerships.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on large areas of existing conifer stands, low site oak AA's, and low stocked AA's.
- Many forms of dispersed and developed recreation are not compatible with high intensity oil and gas development.
- Recreation and wildlife management will be Low Intensity.

i. Management Prescription 5

This prescription emphasizes management of Congressionally designated wilderness.

1) Purpose

- Provide a wilderness experience in a natural-appearing, unmodified environment within a semi-primitive non-motorized recreation setting.
- Preserve natural ecosystems.
- Protect the wilderness character for future generations.
- Provide a variety of wildlife species associated with old growth timber stands.

2) Criteria, Assumptions, and Economic Considerations

- This prescription applies to the Hickory Creek and Allegheny Islands Wilderness Areas.

j. Management Prescription 6.1

This prescription emphasizes a land condition where much of the vegetation progresses through to mature or over-mature hardwood forests.

1) Purpose

- Emphasize a variety of dispersed recreation activities in a semi-primitive motorized setting.
- Emphasize wildlife species which require mature or over-mature hardwood forests, such as turkey, bear, and cavity nesting birds and mammals.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- High intensity oil and gas development is not compatible with Management Prescription 6.1.
- High, Medium, and Low Intensities for recreation/wildlife are all options for 6.1.

k. Management Prescription 6.2

This prescription emphasizes the production of hardwood sawtimber in a setting suitable for dispersed non-motorized recreation. The timber activities will occur in a ten-year, intensive management period which occurs every 40 years. Dispersed recreation activities will be emphasized during the remaining 30 years of the 40-year cycle.

1) Purpose

- Provide a sustained yield of Allegheny hardwood and oak sawtimber using even-aged management.
- Emphasize turkey and bear in all timber types.
- Provide a semi-primitive non-motorized setting with opportunity for a variety of dispersed non-motorized recreation experiences.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.

- To keep analysis costs down, we restricted the number of management intensities to High, Medium, and Low recreation/wildlife and a high intensity for timber management which includes thinnings but no precommercial thinnings. (Since the first commercial thinning occurs at age 80, precommercial thinning at age 25 does not produce very high returns on the investment).
- Large amounts of intensive oil and gas development are generally not compatible with providing a semi-primitive non-motorized recreation experience in 6.2. Prescription 6.2 can best be applied to areas with a low potential for oil and gas development.

1. Management Prescription 6.3

This land condition will be dominated by large savannah-like areas, open bodies of water, and vegetation dependent upon riparian conditions intensively managed to produce high populations of associated wildlife species.

1) Purpose

- Intensively manage for wildlife species which require riparian habitat, including waterfowl, furbearers, and warmwater fish.
- Emphasize dispersed recreation activities (particularly hunting, fishing, and wildlife observation) in a semi-primitive motorized recreation setting.

2) Criteria, Assumptions, and Economic Considerations

- This prescription will apply to small, site-specific locations on the Forest which are now managed as or have the potential to be managed for upland food plots, wetlands, and open bodies of water.
- A number of public agencies may cooperate in the resource management activities here.
- High Intensity recreation/wildlife management will predominate.
- We will complete the analysis and assign acreages outside of the FORPLAN model.
- Management prescription 6.3 is not compatible with intensive oil and gas development.

m. Management Prescription 6.4

This prescription is for managment of Congressionally designated national recreation area.

1) Purpose

Preserve and enhance the existing semi-primitive and developed recreation uses.
Emphasize the need to conduct mineral exploration and development activities in a manner which minimizes disturbance and any resulting adverse environmental impacts.

2) Criteria, Assumptions, and Economic Consideration

This prescription applies specifically to the former Tracy Ridge, Cornplanter, and Alleghany Front Area hereafter referred to as the "Allegheny National Recreation Area."

n. Management Prescription 6.5

In this prescription, the Forest will generally have a continuous crown canopy consisting primarily of shade tolerant vegetation and interspersed openings with associated wildlife. It provides semi-primitive non-motorized recreation opportunities and no timber harvesting for 150 years followed by a 150-year period of timber management and an emphasis on roaded natural recreation opportunities, before returning once again to the semi-primitive non-motorized phase.

1) Purpose

- Provide a continuous forested scene by emphasizing the following vegetation management cycle: no timber harvesting for 150 years, uneven-aged management for hardwoods for 150 years, etc.
- Emphasize semi-primitive non-motorized dispersed recreation opportunities for the first 150 years and roaded natural dispersed recreation for the next 150 years before returning to the semi-primitive non-motorized phase.
- Emphasize quality sawtimber production of tolerant species.

- Emphasize a variety of wildlife species associated with uneven-aged habitat, including bear, songbirds, and cavity-nesting birds and mammals.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- Intensive oil and gas development is not compatible with Prescription 6.5.
- This prescription emulates the land condition and management described in the book The Lands Nobody Wanted (Shands & Healy, 1977).
- Over time, forest vegetation will gradually move toward a more shade tolerant species composition with lower timber values.
- In FORPLAN, we assigned the next 80 years to the "semi-primitive" phase and the last 70 years of the planning horizon to the timber harvesting phase for two reasons: (1) We wanted the opportunity to model the shift in management within the 150-year Land Management Planning horizon and (2) The average age of timber on the Forest is 70 years. Volumes and values start to change drastically at age 150.

o. Management Prescription 7

This prescription emphasizes high-density, self-contained, destination-type recreation developments within a forest environment.

1) Purpose

- Provide high-density, self-contained forest recreation developments in a roaded natural or rural setting.
- Vegetation management will ensure the long-term viability, safety, and attractiveness of the area will continue throughout the anticipated life of the development.

2) Criteria, Assumption, and Economic Considerations

- This prescription applies to site-specific locations.

- Analysis for Prescription 7 will be completed outside FORPLAN. Appropriate areas will be added to alternatives to satisfy the theme of each alternative.
- Examples of existing sites which fall into this category are Kinzua Beach, Wolf Run Marina, and Kiasutha, all along the Allegheny Reservoir.
- High intensity oil and gas development is not compatible with Prescription 7.
- Apply High Intensity recreation/wildlife management.

p. Management Prescription 8

This prescription emphasizes the management of "special areas" on the Forest.

1) Purpose

- Preserve unique ecosystems for scientific purposes.
- Establish areas where we will conduct research to improve the benefits of forests.
- Protect unique areas of national significance.

2) Criteria, Assumptions, and Economic Considerations

- This prescription applies to very site-specific locations, such as the Kane Experimental Forest, Tionesta Research Area, Tionesta Scenic Area, and Heart's Content.
- Intensive oil and gas development is not compatible with Prescription 8.
- Analysis for Prescription 8 will be completed outside FORPLAN. Each alternative will include, at a minimum, the areas listed in item (a) above.
- Apply High Intensity recreation/wildlife management to Heart's Content and the Tionesta Scenic Area and Low Intensity to the other two areas.

q. Management Prescription 9.1

This prescription emphasizes a land condition with vegetation progressing through a natural succession process to mature and over-mature hardwood and softwood

forests with few investments for resource management. Natural forces play the dominant role in site or vegetation change.

1) Purpose

- Emphasize minimal management and investment in the area.
- Protect the life, health, and safety of incidental forest users.
- Prevent significant loss of existing resources or productivity on the site or on adjoining land areas.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.
- Vegetation will gradually develop a shade tolerant species composition with lower timber values.

r. Management Prescription 9.11

This prescription emphasizes a land condition dominated by intensive oil and gas developments and vegetation progressing through a natural succession process to mature and over-mature hardwood and softwood forests. Natural forces play a dominant role in site or vegetation change.

1) Purpose

- Emphasize minimal management and investment in the area.
- Protect the life, health, and safety of incidental forest users.
- Prevent significant loss of existing resources or productivity on the site or on adjoining land areas.
- Manage high intensity oil and gas development to meet objectives (a) thru (c) above on outstanding, reserved, and USA mineral ownerships.

2) Criteria, Assumptions, and Economic Considerations

- This prescription is a choice on all Analysis Areas.

- There are few investments for resource management aside from those necessary to manage the oil and gas development.
- Vegetation will gradually develop a shade tolerant species composition with lower timber values.

3. Prescription Summary Tables

This section includes additional detailed information and displays for the topics discussed in Sections III.D.1. and III.D.2 above. The tables display the prescription choices available on each Analysis Area, the intensity choices for each management prescription, the timber timing options for a typical analysis area, and the timing of the first commercial thinning or selection cut on each Analysis Area for those prescriptions which have these activities as options.

a. Prescription Choices for Analysis Areas

Table B-4 below displays the prescription choices for analysis areas. Section III.D.2. explains the rationale for limiting the availability of certain prescriptions. A more detailed presentation of prescriptions by analysis areas can be found in the process records.

Table B-4 DISPLAY OF GENERAL MANAGEMENT PRESCRIPTION CHOICES FOR ANALYSIS AREAS

General Management Prescription #	Prescription in FORPLAN?	Summary of AA's Where the Prescription May Apply
1/1.11	yes	All Analysis Areas where aspen exists
2/2.21	yes	All Analysis Areas
3/3.41	yes	All Analysis Areas
4/4.01	yes	Low site index oak and low stocked AA's
5	yes	Applies to Hickory Creek and Allegheny Islands Wilderness Areas
6.1	yes	All Analysis Areas
6.2	yes	All Analysis Areas
6.3	no	Applies only to existing and potential site-specific areas
6.4	yes	Applies to the Allegheny National Recreation Area.
6.5	yes	All Analysis Areas
7	no	Applies only to highly developed recreation areas around the Allegheny Reservoir
8	no	Applies only to existing and potential site-specific areas
9.1/9.11	yes	All Analysis Areas

b. Recreation/Wildlife and Timber Intensity Choices for Each Prescription

Table B-5 below displays both the recreation/wildlife intensites and the corresponding timber intensities for each Management Prescription. It also shows the Analysis Areas where each is a valid choice. Each listed recreation/wildlife intensity is an option for each listed timber intensity. "H, M, L" means High, Medium, and Low as defined in Section III.D.1.d.3(b). For Management Prescription 3/3.41, the listed timber intensities are broad categories, which (in FORPLAN) may each consist of several sub-intensities differing by the number of thinnings or the timing of thinnings in either the existing or regenerated yield tables.

Table B-5 DISPLAY OF RECREATION/WILDLIFE AND TIMBER CHOICES FOR EACH MANAGEMENT PRESCRIPTION

Prescription	Rec/WL Intensity	Timber Intensity	Analysis Areas
1/1.11	H	commercial, non-commercial	all
2	H, M, L	one	all
2.21	L	one	all
3	H, M, L	precommercial & commercial thin	high site oak, high CAPs-high stocking
	H, M, L	commercial thinning	all except low stocking
	H, M, L	regeneration cut only	all except low stocking
	H, M, L	type conversion (oak to CAPs)	oak high site
	H, M, L	plant CAPs and commercial thin	all low stocking
3.41	L	same 5 intensities listed for 3	same as for 3
4	H, M, L	regeneration cut in existing & commercial thin in regenerated conifer stand	low stocking & low site oak
4.01	L	same as for 4	same as for 4
5	L	one	Hickory Creek Allegheny Islands

Table B-5 (con't DISPLAY OF RECREATION/WILDLIFE AND TIMBER CHOICES FOR EACH MANAGEMENT PRESCRIPTION

Prescription	Rec/WL Intensity	Timber Intensity	Analysis Areas
6.1	H, M, L	one	all
6.2	H, M, L	commercial thinning	all
6.3	H	one	site specific
6.4	H, M, L	one	Allegheny National Recreation Area
6.5	H	one	all except low stocked
7	H	one	site specific
8	H	one	site specific
9.1/9.11	L	one	all

c. Analysis Area Age at First Commercial Thinning or Selection Cut

Table B-6 below lists all of the prescriptions with timber intensities which have commercial thinnings or selection cuts. Secondly, it shows the earliest age for the first possible commercial entry. Following this first entry, each Analysis Area for prescription 3 has a commercial thinning option every 20 years thereafter. In 3, no thinnings occur after the Analysis Area is 120 years old. Selection cuts occur on a 20-year cycle for every intensity in 2, 2.21, or 6.5. The age of first entry is 60 years, with analysis areas older than 60 years requiring a series of cuts 20 years apart to bring them into an unevenaged condition. In prescriptions 2 and 2.2, each Analysis Area has the option of waiting until age 70 for the first entry. Prescription 3 also has this delayed entry option on the Analysis Areas which have the highest PNV (see Timber Financial Analysis in planning record), those with high CAPs and high stocking.

Table B-6 AGE OF ANALYSIS AREA AT FIRST COMMERCIAL THINNING OR SELECTION CUT ENTRY

Prescription	Analysis Areas	Age at First Possible Entry
2 /2.21	all	60 years
3 /3.41	oak-all	60 years for all intensities except precommercial thinning
	-High site	50 years for precommercial thinning intensity
3/3.41	ALL CAPs	
	45-74% stocked	80 years
	75% stocked	60 years
	25% CAPs	50 years for precommercial thinning intensity
4 /4.01	Low stocked & Low site oak	35 years for spruce and 25 years for red pine
6.2	all	80 years
6.5	all	150 years

d. Display of Timber Timing Options

Timber timing options in the FORPLAN model vary according to the following characteristics: timber type, stocking level/site index, and timber intensity. Section III.D.1.d., covers additional information about the timing options. Table B-7 below shows an example of the wide range of timing options available in the model. It displays the range of choices available for timber harvesting prescriptions on all of the 60-year-old Analysis Areas. This covers a major portion of the total Forest acreage, since 45% of the area is in this age class. Prescriptions 3 and 3.41 contain roughly 80% of all the options.

For each Analysis Area, Table B-7 shows the range of timing options for both the existing stand and the regenerated stand for each timber intensity. The numbers, expressed in decades, are the range of rotation ages permitted in the FORPLAN model. Timing options result from combining each age in the existing stand with each age in the regenerated stand, excluding those options which in the regenerated stand call for final harvest beyond decade 17. In order to keep the number

of options to a reasonable level, we have also excluded every other rotation age in the regenerated stand. (We ran the Max PNV Benchmark with all timing options and again with only every other timing option in the regenerated tables. The results showed an insignificant change in PNV occurred, and timber harvest volumes did not significantly change. Reducing the timing options did, however, significantly decrease the computer costs for the run. See planning record for more detail). These specifications yield 9,681 timber intensities and 29,044 timing options when we add the H, M, L recreation and wildlife intensities. These timing options apply to all Forest Plan alternatives except those which emphasize a "big tree" effect, Alternatives A and E.

For alternatives which emphasize "big trees", we specified that no regeneration cuts could occur on any Analysis Area until that Analysis Area has reached 95% of the culmination of mean annual increment (CMAI) of dollar value per acre, as recommended by the Pittsburgh office of the Sierra Club. On the Allegheny, this point always occurs after CMAI of volume growth per acre. This increases the first entry rotation age to 100, 110, or 120 years, depending on the Analysis Area. In order to continue to provide the wide range of timing options for each intensity, we increased the upper limit of the range from 150 to 200 years on all Analysis Areas. This results in 4,593 timber timing options and expands to 13,779 when the H, M, L recreation and wildlife intensities are added. The following accounts for the significant reduction in timing options:

- In the "big tree" concept, we did not permit prescriptions which allow oak to convert to Allegheny hardwoods.
- Even though we extended the upper limit of the range to 200 years, the model does not count many of these. It drops all options which call for final harvesting in the regenerated stand beyond decade 17.

This chart shows the timing options for only the 60-year-old age class. Other age classes have slightly different CMAI's, so the age at the lower end of the range will differ by 10 to 30 years. All Analysis Areas have 150 years as the upper limit for Prescription 3, except the low stocked.

Table B-7 TIMBER TIMING OPTION CHOICES FOR PRESCRIPTIONS ON 60-YEAR-OLD ANALYSIS AREAS

Prescription	#Timing Choices	Timber Type	Stocking/ Site Index	Intensity* Regen. Cut Only Exist	Regen. Cut Only Regen	Commercial Thin Exist	Commercial Thin Regen	Conversion Exist	Conversion Regen	PCT & Commercial Thin Exist	PCT & Commercial Thin Regen
1/1.11	6	Aspen Inclusions	All	5-7	3-4						
2/2.21	2	All	All	Make first selection cut at 60 or 70 years.							
3/3.41	Many	Oak	SI≥65	6-15	5-15	8-15	8-15	8-15	8-15	8-15	7-15
			SI<65	6-15	6-15	8-15	8-15				
		High CAPs	45-74%	8-15	6-15	9-15	9-15				
			≥75%	6-15	5-15	8-15	7-15			8-15	7-15
		Low CAPs	45-74%	8-15	8-15	9-15	9-15				
			≥75%	7-15	7-15	8-15	8-15				
		All CAPs	<45%					6-20	8-15		
4/4.01	Many	Oak	SI<65			8-15	7-15				
		All CAPs	<45%			8-15	7-15				
6.2	Many	Oak	All			10-18	12-20				
		Low CAPs	All			10-18	12-20				
		High CAPs	All			10-18	12				
6.5	1	Make the first entry when the Analysis Area is 150 years old									
TOTAL	9,681	For all ages on all of the Analysis Areas combined.									

*The numbers displayed below in each column show the range of rotation ages included in FORPLAN for each intensity and timber type combination. The first number in each column is the earliest age for regenerating an analysis area and the last number is the oldest age (ex. 6-15 means earliest age is 60 years and latest is 150 years). We established the earliest age for each analysis area by calculating when it reached 95 percent of CMAI.

e. Process Used to Ensure Availability of a Broad Range of Prescriptions

The discussion in Section III.D.1.b. and Section III.D.1.c. explains Allegheny National Forest's efforts to ensure that a broad range of prescriptions are available to 1) meet the objectives of each alternative and 2) to properly evaluate a broad spectrum of resource management opportunities.

Identification of Prescriptions

E. Process for Developing Prescription Yield Coefficients

The process used to develop yield coefficients varies by Resource Element, Analysis Area, and Management Prescription. The effort we expended to develop a given yield table was directly proportional to the significance of the relationship to the planning problems, cost/value impacts, and the overall applicability of the Management Prescription to the Forest. Section II.A.3. provides an overview of the yield coefficient development process. The remainder of this section discusses additional details about the development of production coefficients.

1. Timber

The timber yield coefficient development process varies by timber type and Management Prescription. Our Land Management Planning process records contain specific details regarding each yield table's development.

a. Prescription 1/1.11

We reviewed the following sources of information which are described in Section II.B.

- timber inventory data in TMIS,
- growth projections from SIMAH for low CAP Analysis Areas,
- STEMS aspen growth projections for the Chippewa National Forest,
- published aspen yield tables for the Lake States from Agricultural Handbook #486.

STEMS estimates and the published aspen yield tables all reflect higher cubic volumes per acre than values from SIMAH (see SIMAH explanation) for low CAP Analysis Areas. The cubic volume yields from SIMAH looked more reasonable for our poorer quality stands which have a significant aspen component. Since Prescription 1/1.11 will not apply to any more than 10,000 to 20,000 acres in any Alternative, we used the SIMAH values as our best estimate of 1/1.11 timber yields.

b. Prescriptions 2/2.21

In recent years the Allegheny National Forest has not practiced much uneven-aged management so there is very little growth and yield data available. The Northeast Forest Experiment Station, using a local stand table for low CAP Analysis Area, used SIMAH to make growth and yield projections for uneven-aged management. We then applied this volume table to all Analysis Areas, making slight volume adjustments which we felt were necessary. We also adjusted stumpage values (by timber type) to more closely show the differences in value which currently exist for the various timber types, using the values in Prescription 3 as a guide.

c. Prescription 3/3.41

The yield tables for this prescription came from two sources: yields for low and high CAP Analysis Areas came from SIMAH, while the oak yields came from published research (Dale, 1972) tempered by our professional knowledge of local growth response and timber sale yields. For the high and low CAP Analysis Areas, we provided the Northeast Forest Experiment Station with a set of stand tables from TMIS for each appropriate Analysis Area type. Using these stand tables and SIMAH, they projected growth and yields out to age 150. We added 50 more years based on our professional knowledge so that each timber yield table extends to age 200. For oak Analysis Areas we used Dale's published unmanaged yield tables and adjusted them to reflect thinning yields and subsequent growth response based on our local professional knowledge. Yields for CAP Analysis Areas from SIMAH provided a good point for comparison.

d. Prescription 4/4.01

This prescription has two yield tables: red or white pine for medium to well-drained sites and spruce for poorly to very poorly-drained sites. For red pine we reviewed the following data sources:

- Growth and Yield of Red Pine in Minnesota (USDA-FS, 1962)
- Growth and Development of Older Plantations in Northwestern Pennsylvania (Grisez , 1968)
- TMIS inventory data

Griez's local volume tables compared favorably with the unmanaged yield tables for Minnesota. However, we believe that the Minnesota tables better represent our expected volumes, and we used them as the basis for our unmanaged tables. We then adjusted them to reflect thinnings and subsequent growth response. For spruce we reviewed the following information:

- spruce/fir tables from the White Mountain National Forest,
- STEMS growth projections for spruce on the Chippewa National Forest.

Using these tables as a guide, we developed a table to fit the growth and yield response we have observed in the few existing spruce plantations on the Forest.

e. Prescriptions 5, 6.4, 9.1, 9.11

These prescriptions do not have any substantial amount of timber harvesting. In order to keep track of the timber volume inventory for them, we entered the unmanaged yield tables from Prescription 3 in the FORPLAN model.

f. Prescription 6.1

Following the public review period for the planning documents, we adjusted this prescription to more clearly explain and model the wildlife vegetation manipulation which will occur. In the draft we simply tracked the standing timber inventory using the unmanaged yield tables from prescription 3 for each analysis area. For the final documents we calculated average per acre yields from the FORPLAN results for Alternative D by harvest method. Then we applied these to the acres treated each decade in Management Area 6.1 and added them manually to all of the summaries in the documents.

g. Prescription 6.2

This prescription only permits timber harvest activities during one ten-year period out of every 40 years. We used the Prescription 3 yield tables as the basis for the 6.2 tables, and we adjusted them using our professional knowledge of growth and yield response so the thinnings would conform with the periods when timber harvest is permitted. We did not permit any regeneration cutting before 95 percent CMAI.

h. Prescription 6.5

Since we do not expect this prescription to apply to a significant portion of the Forest in any of the alternatives, we did not make special SIMAH runs for it to calculate yields. Using growth and yield responses developed for 3 and 2 as background data, we developed a new set of yield tables for 6.5 by hand.

i. Timber Volume Adjustments

The timber yields produced through the process described above for each Management Prescription did not include all of the adjustments necessary to account for inclusions of land which will not produce timber or which will have reduced yields for multiple-use reasons. Consequently, we have applied the following timber volume adjustment factors to the yield tables for all analysis areas in the FORPLAN model. Our Land Management Planning process records contain a detailed discussion of the procedure we followed to calculate them. Section II.A.3. and III.B.1.e. provides additional information. Some of these reductions result from activities implemented to meet minimum management requirements.

Table B-8 TIMBER YIELD REDUCTION FACTORS BY MANAGEMENT PRESCRIPTION

	Reduction Amount by Prescription							
Reason for Reduction	1	1.11	6.5 2	2.21	3 6.2	3.41	4	4.41
1. Conifer, Aspen, Roads, R/W, Perm. Openings	.15	.15	.10	.10	.10	.10	.06	.06
2. High Intensity OGM	--	.13	--	.13	--	.12	--	.13
3. Steep	--	--	.005	.005	.024	.024	.024	.024
4. Rocky	--	--	.025	.025	.025	.025	.025	.025
5. Riparian	.009	.009	--	--	.009	.009	.009	.009
6. VQO	--	--	--	--	.029	.029	.029	.029
TOTAL VOLUME REDUCTIONS	16	.29	.13	.26	.19	.31	.15	.28

2. Recreation

Recreation yields in the FORPLAN model include only those resulting from dispersed recreation use. We estimated the developed recreation yields outside the

model for each specific site using RIM historical use figures, site capacity (which relates to ROS Class and site characteristics), and professional judgment. The dispersed recreation yield coefficients vary by Management Prescription and management intensity within each prescription. The Allegheny National Forest planning records specifically describe how we developed the coefficients for each prescription and intensity. The following is a brief description of the process.

First, we identified sample land areas on the Forest which we felt represented each Recreation Opportunity Spectrum (ROS) Class. Based on an analysis of the samples, we then calculated an average maximum capacity (Persons at One Time-PAOT) for each ROS Class. The ROS User's Guide (USDA-FS, 1982) and RIM provided background information. Next, we estimated Recreation Visitor Day's (RVD's) of potential use for each of these ROS Classes using the formula in the ROS User's Guide. We used professional experience and RIM data to develop the values of the independent variables in that equation. Each Management Prescription's potential RVD yield then relates to its respective ROS Class. Using the specific recreation objectives for each prescription, historical RIM use data, and professional judgment, we estimated the actual use we felt each Management Prescription would yield. This included estimating the expected actual use for each recreation intensity within each Management Prescription. Low Intensity emulates the current level of actual use which is about 12 percent of the potential use. Medium and High produce progressively higher yields based on increased investments. Here is a sample of the type of adjustments we made to the ROS Class yields: 1) each high intensity OGM prescription with one well every 500' as well as roads and pipelines to each well produces approximately 75 percent lower yield then does its corresponding low intensity OGM development prescription, and 2) Prescription 2, with a roaded natural ROS Class but with a continuous forest canopy, produces 30 percent more RVD's than the current Forest-wide average for roaded natural. Again, this work resulted in RVD yield coefficients for each Management Prescription and for each management intensity therein.

3. Wildlife

In Land Management Planning we have considered the following kinds of Wildlife and Fish User Day's (WFUD's) yields: big-game, small-game, furbearers, waterfowl, and non-game. Wildlife yields in the FORPLAN model include only the big-game category. Big-game WFUD's are a function of the Management Prescription activities, timber age, and timber density. We calculated the rest of the yields outside of the model based on the final results of each alternative. Non-game WFUD's are a fixed percentage of the dispersed recreation use. Small-game, furbearer, and waterfowl WFUD's estimates are related to habitat improvement and timber type. Pennsylvania Game Commission data was used. To calculate big-game WFUD's, we used yield coefficients developed for timber age and type classes and the Pennsylvania Game Commission's hunter game take survey information.

The following is a brief description of the process we used to calculate the FORPLAN big-game WFUD coefficients. The Pennsylvania Game Commission has developed estimates for big-game (deer, turkey, bear) carrying capacity. These are the populations we can carry and still be able to regenerate timber without making substantial investments in regeneration practices which will limit deer browsing damage to new seedlings. We refined these using our professional judgment to show carrying capacities for three major management strategies and the management intensities therein: uneven-aged management, even-aged for conifers, and even-aged for hardwoods. This gave us yields we could apply to all of the general management prescriptions. First, we developed carrying capacities for timber age and density classes assuming only the maintenance of existing wildlife habitat improvements. These yields reflect primarily the population changes we can expect from timber harvesting and size class changes. We defined this as Low Intensity. Next, we developed carrying capacities for the same identifiers for the Medium and High Intensities for wildlife management, each having progressively more habitat development and progressively higher carrying capacities. Research conducted by the Pennsylvania Game Commission has established harvest rates for the major game species and the number of WFUD's required to harvest one animal. Multiplying the carrying capacity by the harvest rate by

the number of WFUD's required to harvest one animal gives us the total WFUD production coefficient for the identifier.

Deer populations on the Forest currently exceed the carrying capacities described above. Several years ago the Forest, in cooperation with the Pennsylvania Game Commission, began to more carefully monitor and regulate the deer harvest so we could reach these objectives. The FORPLAN model includes the carrying capacities described above not the current levels. The fern/striped maple understory problems are additional complicating factors. Assuming we achieve the carrying capacity, it was estimated that within 50 years we will only need 20 percent of the current regeneration investments.

IV. ECONOMIC EFFICIENCY ANALYSIS

A. Describe PNV

The regulations published in the Federal Register, September 30, 1982 states that the Forest Service should develop a planning process in which "..... the resulting plans provide for multiple-use and sustained yield of goods and services from the National Forest System in a way that maximizes long-term net public benefits in an environmentally sound manner (36 CFR 219.1)." Net public benefits is defined to be "the overall value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. The definition of "net public benefits" and the current state-of-the-art methodology in economics and all other disciplines rules out the possibility of a single value or index to represent net public benefits. Instead, the Forest planning analysis process sought to simultaneously analyze and display all outputs, inputs, and effects so decision-makers could weigh all of the values identified by markets, preferences, and trade-offs to determine the allocation of resources that comes nearest to the greatest long-run net public benefits.

Present net value (PNV) is one of the criteria used to determine net public benefits in benchmarks and alternatives for the Allegheny National Forest. PNV is the difference between the discounted value of all priced outputs and all Forest Service management and investment costs over the analysis period or 150 years. The PNV of each alternative estimates the value of the maximum attainable net benefits of priced outputs.

The priced outputs which are included in PNV are those that are or could potentially be sold in the market place. On the ANF, the priced outputs were the stumpage value of timber and recreation visitor days (RVD's) of developed recreation, dispersed recreation, hunting, fishing, and wilderness use.

Present Net Value (PNV)

The alternatives are designed and analyzed to achieve their goals and objectives in a manner that achieves the greatest excess in the value of priced outputs in relation to their cost while meeting all specified constraints and objectives for non-priced outputs. Thus, the PNV of each alternative estimates the value of priced outputs realized in excess of all the Forest Service costs of producing priced outputs, non-priced outputs, and meeting management requirements. Net public benefits therefore can be defined as the sum of PNV plus the full value of non-priced outputs. The full value can be used because its cost of production is already accounted for in PNV.

B. Parameters

1. Discount Rates

The discount rate represents the cost or time value of money in determining the present value of future costs and benefits. The Allegheny NF performed the cash flow analysis in Forest planning using a 4 percent discount rate to evaluate benchmarks and alternatives. This rate approximates the return on long-range investments above the rate of inflation.

2. Demand Curves

Reasons for estimating future resource demands fall into three categories:

a. Maximum anticipated amounts of resource or use which is likely to be consumed needs to be estimated so that excess output amounts will be not valued in the analysis. Demand "cut-off" constraints are available to DE FORPLAN for this purpose.
b. Price/quantity relationships for goods and services need to be determined if downward sloping demand curves are to be used in the analysis.
c. Society's preferences for goods and services need to be known to guide the allocation of land, labor, and capital.

We wanted to estimate demand or consumption for all modeled outputs, particularly those related to the problem statements.

RECREATION/ WILDLIFE

The problem posed in the recreation/wildlife problem statement concerns the best or optimum mix or recreation opportunities to provide on the Allegheny National Forest. We believe this mix is best measured by evaluating RVD's in the ROS categories. Thus, we attempted to forecast recreation and wildlife consumption levels for each ROS class.

Consumption estimates for recreation and wildlife were derived from applying the recreation growth indices from the 1980 RPA "An Assessment of the Forest and Rangeland Situation in the United States," to the current recreation and wildlife use levels.

Present Net Value (PNV)

The following is a comparison of projected recreation and wildlife consumption to the results of the Max PNV benchmark run:

	Decades				
	1	2	3	4	5
Projected Total Demand for Disp. Recreation/ Wildlife Use (M RVD's)	13,406	15,612	19,034	21,617	25,588
Total Dispersed Use From Max PNV FORPLAN Run (M RVD's)	11,683	13,014	14,153	15,187	15,673

In every decade, RVD's from the benchmark run is lower than projected consumption. Thus, demand cut-offs set at the projected total use level, would not have been binding in FORPLAN.

Based on (1) the high occupancy rates of campgrounds along the Allegheny Reservoir and (2) results of public involvement with leaders in the recreation field, the Management Team concluded that demand exists for new campgrounds and access to major water bodies on the Forest. These water bodies include the Allegheny River and Reservoir, Clarion River, and Tionesta Creek.

WILDERNESS

No efforts were made to quantify the demand for wilderness use. The ID Team concluded that the demand for wilderness experiences on the Allegheny National Forest is very high given that half the country's population lies within a day's drive of the Forest. There are no designated Federal wilderness areas in Pennsylvania, New York, or Ohio, although New York has the Adirondack Preserve. There is a significant wilderness opportunity in Canada. The Commonwealth of Pennsylvania manages a system of relatively small wild areas.

Demand for wilderness designation on the Forest is obviously high, and the available supply in Pennsylvania is low.

GRAZING

The Allegheny National Forest has areas that could provide grazing units. However, according to a study by Bowersox and Strauss (1980) the market demand for grazing areas is near nonexistent. Bowersox and Strauss surveyed private livestock owners adjacent to the Forest.

The survey revealed that the livestock operations are relatively small and the operators have adequate supplies of pasture at, or very near, the central farm. Since public demand for hay or livestock grazing is nonexistent, no management of this resource is planned.

TIMBER

Local timber demand curves from the Allegheny National Forest were not used in FORPLAN for the following reasons. The market for the timber species sold on the Allegheny National Forest is so large it is difficult to develop a curve which accurately reflects future demand. Examination of historical data of timber offered only indicates what was done in the past and is not necessarily an indication of future needs. In fact, in the past few years, the Forest has seen a large increase in timber offered. The increase was a response by the Forest to the timber volume under contract decreasing, indicating that (1) demand is high and (2) more timber could be sold if offered. Even with the increased timber offered there have not been any "no bid" sales, again indicating demand is high.

A meeting with members of the local timber industry indicated that (1) the ANF is a relatively small part of the region's sawtimber and pulpwood market, (2) the ANF could triple its sawtimber offer without requiring any major new investments in mill capacity, and (3) the ANF could double its sawtimber offer immediately with few "no bid" sales. Examination of the "maximum timber" benchmark run indicates that in Decade 1 timber volume does not double and at no point in Decade 3 will the volume offered triple.

Based on this information, we estimate the demand curve for the Allegheny National Forest to be a horizontal line, meaning that timber demand is greater than the production capabilities of the Forest. Therefore, demand cut-offs for timber outputs were not used in the FORPLAN model.

OIL, GAS, AND MINERALS

This nation's oil and gas industry began 125 years within a few miles of the Allegheny National Forest. Ten percent of the Forest's surface area is intensively developed for oil and gas production. Extensive oil and gas deposits still underlie the area.

Almost 94 percent of the oil, gas, and mineral rights under the Forest are owned by the private sector. The private mineral owner determines the development schedule.

Present Net Value (PNV)

Continued oil and gas exploration and development may occur anywhere on the Forest, though there are some areas which have a higher probability. As the price per barrel of crude oil increases, secondary and tertiary recovery on old, shallow fields become economically practical. Exploration for new, smaller fields also becomes worthwhile. We can also expect future oil and gas production from deep reservoirs. The current limited production from deep formations probably reflects the low amount of exploration done in them rather than the absence of petroleum reserves.

One indicator of demand for oil and gas from the Forest is the number of wells shown on private developers' State drilling permit applications. The Forest began collecting this information for proposed development on Allegheny National Forest in 1976. The number of private drilling permit applications for the Allegheny National Forest for 1976 - 1982 is summarized below:

Fiscal Year	Total Number of Wells
1976	256
1977	293
1978	383
1979	410
1980	737
1981	558
1982	942

There are 52,000 acres of existing high intensity oil and gas development. We have defined a high intensity development as one with five or more wells spaced less than 1,000 feet apart. Each well affects approximately 5 acres surrounding it, and with the access roads results in about 3/4 acre of cleared land.

We have made three alternative estimates of the demand for oil and gas from the Allegheny National Forest which we have called high demand, medium demand, and low demand. These translate into three estimates of oil and gas development activity. All of them increase the level of high intensity oil and gas development on the Forest over the 150 year planning period. With the low demand projection, there will be an additional 13,000 acres, and with the high demand projection an additional 137,000 acres. We expect the actual amount of development which occurs over the next few decades to be closer to the high estimate than to the low.

Present Net Value (PNV)

For each we have estimated the number of new wells, the new acres cleared, and the new acres affected. Table B-9 displays these for the Low and the High Demand scenarios.

Table 2-8 in the Final EIS displays the BBTU's of energy produced and the total value based on the 1982 price per barrel of oil, discounted to 1978 dollars.

Table B-9 Private Oil and Gas Activity Projections for low and high demand by decade

	NEW WELLS DRILLED		NEW ACRES CLEARED		NEW ACRES AFFECTED	
DECADE	LOW DEMAND	HIGH DEMAND	LOW DEMAND	HIGH DEMAND	LOW DEMAND	HIGH DEMAND
1	860	8600	.6	6	4	43
2	860	8600	.6	6	4	43
3	602	6020	.5	5	3	30
4	344	3440	.3	3	2	17
5	172	1720	.1	1	1	9

High Demand

This level is based on the highest oil and gas development activity the Forest has experienced, which occurred between 1980 and 1982. Any of the following events would tend to make high demand a reality:

- price of oil or gas remains high or increases;
- technological improvements in oil recovery;
- deep gas exploration leads to more than one major discovery on the Forest;
- preferential tax treatments or other government incentives for oil or gas development continue or increase;
- embargoes or other disruptions of U. S. overseas energy supplies.

Medium Demand

The medium demand estimates fall mid-way between the low and the high estimates.

Low Demand

The low demand estimate is based on the level of activity which occurred on the Forest in the 1960's before the energy crisis of the mid-1970's. It is about 10 percent of the high demand. Any of the following trends or events would tend to make low demand a reality:

Present Net Value (PNV)

- price of Pennsylvania crude oil drops due to major discoveries of similar quality oil on the North American Continent or due to a technological advance which decreases demand for Pennsylvania grade crude oil;
- technological improvements in oil recovery do not enable developers to wring much more oil out of the tight oilbearing sandstones;
- Federal and State governments increase taxes on oil or gas producers, or create other disincentives;
- no embargoes or other disruption of U. S. overseas energy supplies.

It is important to keep in mind that oil and gas demand is extremely volatile, and it can demonstrate sharp increases and decreases even within one decade. This kind of variability can occur even when overall the demand is low. The numbers displayed above merely represent an average.

3. Base Year Dollars

Inflation is not included in the discount rate, benefits, and costs due to the difficulty in estimating future inflation rates and because inflation was assumed to equally affect costs and prices. To insure all values and costs are treated equally in the analysis, a common base needed to be established. All values and costs are expressed in first quarter 1978 dollars. The GNP explicit price deflator index was used to inflate or deflate value and cost data to this common base.

Present Net Value (PNV)

C. Costs

1. Overview

The total cost of a prescription is the sum of the costs of each practice required to meet the objective of the prescription. Each practice requires numerous inputs such as manpower, skills, equipment, and supplies. Variations in total costs between prescriptions reflect differences in the actual combination of practices that compose the prescription, the intensity with which we undertake each practice, the Standards and Guidelines we follow, and the effect site conditions have upon the execution of practices. The total cost for Land Management Planning includes all phases of each project as well as fixed costs and overhead (general administration and program management). All of these costs are either included in the FORPLAN prescriptions or added to each alternative outside of the FORPLAN analysis process.

2. Costs Included in FORPLAN

Since we used FORPLAN as the primary analysis tool to assure that we meet the cost-efficiency requirement of 36 CFR 219.12(f)(8), we attempted to include in FORPLAN all of the project costs needed to implement a management prescription on a given Analysis Area. The total cost of each prescription results from the projects implemented and includes all phases of the project: inventory, planning and design, implementation, and monitoring. Each prescription includes minimum or base level costs which reflect the basic cost of owning the land, providing resource protection, and meeting the minimum management requirements from the NFMA Regulations. It includes such activities as fire protection, law enforcement, pest management, and a minimum amount of road and facility maintenance. For additional discussion of minimum level management, see Section VI.F.11., Section VIII.C.2., and Table B-4. Beyond these costs, each prescription contains those costs necessary to produce the minimum outputs and land condition which will achieve its overall objectives. All costs in the model are expressed in 1978 dollars.

Table B-10 displays the practices or activities whose costs we included in the FORPLAN model. It also indicates whether the costs vary by Management Prescription or Analysis Areas in the model.

Table B-10 Costs Included in the FORPLAN Model

Element	Activity	Cost Per Acre Varies by Prescription	Cost Per Acre Varies by Analysis Area
A	Recreation Planning and Inventory	no	no
	Cultural Resource Inventory	no	yes
	Trail Construction & Maintenance	no	no
	Wildlife Coordination for Recreation	no	no
	Administration of Dispersed Use	yes	no
	Recreation Special Use	no	no
B	Wilderness Planning	no	no
	Wilderness Inventory	no	no
	Facility & Site Construction	no	no
	Facility & Site Management	no	no
	Property Boundary Location	no	no
	Property Boundary Maintenance	no	no
	Trail Construction & Reconstruction	no	no
	Trail Maintenance & Operation	no	no
	Wildlife Coordination	no	no
C	Fish/Wildlife Surveys	yes	no
	Non-Structural Habitat Improvement	yes	no
	Non-Structural Habitat Maintenance	yes	no
	Structural Habitat Improvement	no	no
	Structural Habitat Maintenance	no	no
	Recreation Coordination in C Element	no	yes
	Habitat Improvement-Bulldozing	no	no
E	Timber Harvest Administration	yes	yes
	Stocking Surveys	no	no
	Animal Control	no	yes
	Site Prep for Natural Regeneration	no	yes
	Aerial Fertilization	no	no
	Unmerchantable Stem Treatment	no	yes
	Fern-Striped Maple Control	no	yes
	Fence Maintenance	no	no
	Site Prep for Planting	no	yes
	Timber Stand Improvement	no	yes
	Sale Planning and Preparation	yes	no
	Local Road Construction	yes	yes
	Local Road Reconstruction	yes	yes
	Local Road Maintenance	yes	no

Table B-10 (con't) Costs Included in the FORPLAN Model

Element	Activity	Cost Per Acre Varies by Prescription	Cost Per Acre Varies by Analysis Area
E	Silvicultural Exam	no	no
	Property Boundary Location	yes	yes
	Boundary Line Maintenance	yes	no
	Recreation Coordination for E Element	no	no
	Wildlife Coordination for E Element	no	no
	S-W-A Coordination for E Element	yes	yes
	Mineral Coordination for E Element	yes	no
	Rights-of-Way Acquisition	no	no
	Cultural Resource Inventory	no	yes
	Conifer Release	no	yes
G	OGM Planning and Development	yes	no
	OGM Administration	yes	no
	OGM Abandonment	yes	no
	Recreation Coordination for G Element	yes	yes
	Wildlife Coordination for G Element	yes	no
	Timber Coordination for G Element	yes	no
	S-W-A Coordination for G Element	yes	yes
	Road Coordination for G Element	yes	no
J	Special Use Management	no	no
	Boundary Line Location	no	no
	Boundary Line Maintenance	no	no
	Land Status Maintenance	no	no
	Encroachment	no	no
L	Transportation System Planning & Inventory	no	no
	FA&O Facility Maintenance	no	no
	Dam Administration & Maintenance	no	no
P	Fire Suppression and Presuppression	no	no
	Law Enforcement	no	no
	Cooperative Law Enforcement	no	no
	Search and Rescue	no	no
	Forest Pest Management	no	no

3. Process for Developing FORPLAN Costs

The following is a brief summary of the process we followed when developing our FORPLAN costs:

a. List MIH codes used in the current data base for each project-type in ADVENT,
b. Calculate the average cost in ADVENT data base for each of these MIH activities,

c. SO and District ID Team use these ADVENT activity costs and professional experience to develop MIH activity costs for each prescription and Analysis Area,
d. Management Team review and verify costs for MIH activities for each prescription and Analysis Area,
e. Enter costs in FORPLAN, and
f. Staff and specialists make a final review of costs when looking at the first benchmark runs by comparing total costs and total outputs.

4. Costs Handled Outside FORPLAN

The Planning Team was charged with the responsibility of developing a FORPLAN model small enough so we could understand and interpret it, yet large enough so it would provide meaningful analysis and results. The Team had to make numerous assumptions and decisions before developing and running the model. One of the major decisions was to determine which activities and costs we should include in the model and which we should handle outside of it. These decisions made outside FORPLAN often had the effect of limiting the range of options available in the model. However, since the planning team was also charged with keeping the cost of running the FORPLAN model to a reasonable and justifiable limit (commensurate with the value and reliability of the information used and gained), these limitations were necessary.

36 CFR 219.12(f)(8) requires that each alternative represent, to the extent practicable, the most cost efficient combination of management prescriptions that can meet the objectives established in the alternative. FORPLAN is the primary analytical tool used to assure the alternatives are cost efficient. In cases where the decisions we made outside of FORPLAN had the potential to significantly affect cost efficiency, we completed additional analysis using historical data and the combined experience of our specialists and staff groups. This helped ensure we included the most cost-efficient strategy available to achieve the desired objective.

The reasons for not including certain activities in FORPLAN fall into three broad categories: 1) the total costs for the activities are very site specific; 2) the activities have a non-linear relation to production levels; and 3) the cost or amount of the activity depends on the level of several FORPLAN outputs, and the relationship is too complex to efficiently model. We calculated some of these activities and costs before we completed our FORPLAN runs and some after. Table B-11 shows the costs we did not include in the FORPLAN model, the general reason for not including them, whether they vary by alternative or benchmark, whether we calculated them pre-FORPLAN or post-FORPLAN, and the range of costs between the alternatives for each activity. When reviewing the costs, keep in mind they are discounted to 1978 dollars.

5. Process For Developing Non-FORPLAN Costs

The activities which we handled outside of FORPLAN and their respective costs are quite significant as a proportion of the total costs of each alternative; they constitute 51 percent to 62 percent of the total cost of each. The following discussion briefly summarizes the process we followed when developing costs for each of the activities we did not include in the FORPLAN model (see Table B-11). It also mentions the data or FORPLAN results which helped us estimate the costs.

a. Program Management

This activity includes work related to one or more resource elements but not readily identifiable with individual work projects. We followed the same basic five step approach for each resource element (recreation, wilderness, wildlife, timber, minerals, and the individual support elements) treating program management as a non-linear cost which varies by resource area and the size of the program. Here are the five steps:

- Identify a key output with each element which may be used to reflect changing program size and, therefore, program management dollar needs.
- Collect existing historical data (from PAMARS, MARS, and Program of Work data) on program management dollars and units of accomplishment for each resource area.

- Develop a predictive model using either the least squares regression approach or a fixed ratio of program development dollars per unit of key output.
- Use this model to calculate program management for each element and alternative.
- Review the results with each Resource Staff and identify control points on the linear regression (output levels) over which program management costs remained constant. Where applicable, this led to a non-linear, step like predictive model.

b. General Administration

General administration is work we cannot readily identify with specific resource elements and funding at the time we plan for it, and it is work that properly benefits all activities in the unit. A national study completed by the Washington Office Policy Analysis Staff Group in 1982 entitled "Personnel Profiles for the General Administration and Timber Systems" shows we can predict GA estimates within reasonable accuracy for any given National Forest. Region 9 historically has followed the national average, as has the Allegheny National Forest. The study concludes that we should base GA allocations on economies of scale and program of work considerations.

We used the national average curve developed in the study to calculate GA for the different total program of work costs reflected in each alternative. The following assumptions are important here:

- We assume the Allegheny National Forest fits the average curve and will experience the same economies of scale as have forests with larger budgets.
- In responding to the cost efficiency requirement of 36 CFR 219.12(f)(8), we assume historical GA budgeting patterns represent a cost efficient assignment of dollars.

c. Developed Recreation

Developed recreation construction and maintenance costs are related to specific locations within each analysis area. This makes them more difficult to model in FORPLAN. The new development will occur in the river corridors where demand is highest to support the

dispersed recreation use there. The specific construction sites within the corridor are located to minimize environmental conflicts, thereby lowering construction and maintenance costs and improving cost efficiency. The costs for each new campground are based on the historical costs incurred for our most efficient campgrounds and include the most efficient construction and maintenance methods known. After we calculated the costs for each proposed campground, the Management Team selected specific ones which would meet the objectives of each alternative.

d. Special Area Management

Special Area management costs are small and relate to specific locations on the Forest. We have included the activities and costs needed to carry out current management plans for each of them, using historical costs we have incurred over the last few years as a guide. These represent the most efficient methods we have found to manage each area to meet its objectives.

e. Fisheries Management

The activities included in the fisheries management program are those which state and federal agencies have found to be most effective and cost efficient to increase habitat capability and catch rates for sport fishes. The following are the major activities included:

- Small impoundment construction -- costs we used are based on historical construction costs incurred by the Pennsylvania Game Commission and Pennsylvania Fish Commission both on and off the Allegheny National Forest;
- Structural habitat improvement -- costs we used for fish cover construction in streams and impoundments are based on historical construction costs on the Allegheny National Forest;
- Non-structural habitat improvement -- costs obtained from the U.S. Fish and Wildlife Service, the Allegheny National Forest, and U.S. Army Corps of Engineers for liming and fertilization of lakes and streams in the local area provided the basis for these costs estimates;

- Surveys -- costs for creel census, stream surveys, and impoundment surveys which are completed to check fish response to the various types of habitat improvement came from historical data obtained from the Allegheny National Forest and the U.S. Fish and Wildlife Service.

The total cost of the fisheries management program for an alternative is the sum of the individual costs for a unique mix of each of these activities designed to meet the objectives of that specific alternative.

f. Buildings and Administrative Sites

Construction and reconstruction of buildings and administrative sites, MIH activity L24, includes preconstruction work, construction engineering, and the actual construction or reconstruction of capital improvements to support fire, administrative, and other multi-functional activities. A variety of facilities must be available to support the individual resource program levels projected in the various plan alternatives. We followed these steps in developing amounts and costs for each alternative:

- Determine if the facilities now on the administrative sites are adequate for the present level of business;
- Estimate the changes in facilities needed to support the changes in the various program levels for each alternative;
- Calculate costs for the individual facilities, then sum them for each alternative.

We used the preliminary design for the new Bradford Ranger District office as the basis for estimating costs. A consultant architect and design engineer prepared the design and and associated construction estimates using local Pennsylvania construction costs. The Regional Office reviewed and accepted their estimates. Using the cost per square foot from the Bradford estimates, we then estimated the costs for the rest of the proposed facilities. Warehouses received a proportionately lower cost estimate.

g. Land Acquisition

The land acquisition we included in each alternative resulted from reviewing the objectives of each alternative and then looking at the acquisition needed to help meet these objectives. The general areas where we considered acquiring land included the major river corridors where recreation use is concentrated (Clarion, Tionesta, and Allegheny Rivers) and inholdings which are needed to improve the management efficiency on existing National Forest land. We then calculated the costs for each area we sought to acquire by making rough comparisons with comparable land recently sold in the area. Aggregating the costs for the individual areas included in an alternative yields the total cost for the alternative.

h. Mineral Acquisition

The mineral rights acquisition included in each alternative corresponds with the proposed wilderness areas and developed recreation sites included therein. To calculate the costs for acquiring the mineral rights, we made a rough assessment of the oil and gas production potential for each area. Using the recently completed mineral appraisals for Hickory Creek and the Tionesta Research Area as a guide, we then estimated the mineral acquisition costs for each area. Aggregating the costs for the individual areas included in an alternative yields the total cost for the alternative.

i. Well Plugging (USA minerals)

This includes the cost for plugging old abandoned wells forest-wide which are polluting ground or surface water. We derived the cost estimate from well plugging contracted on the Allegheny National Forest over the last four years.

j. Bridge, Arterial Road, and Collector Road Construction/Reconstruction/Maintenance

Four broad activities are included in this category: road maintenance, road construction/reconstruction, bridge construction/reconstruction, and cooperative road maintenance done by the Forest Service.

We calculated road maintenance using historical information on the cost per mile and the number of miles done each year.

Cooperative road maintenance is completed by the Forest Service but paid for by oil and gas developers as well as timber purchasers to cover their use of public roads. The cost we used is the current cost for doing the actual work.

We historically reconstruct or construct one bridge per year. We have included this in all of the alternatives.

Construction and reconstruction of arterial and collector roads occurs in three resource areas - recreation, timber, and facilities elements. In the recreation element, we reviewed the changes in recreation visitor days from the FORPLAN runs for the various alternatives and found the differences are not large enough to cause significant differences in road construction/reconstruction between alternatives. In the timber element, historical records show harvest volumes are the best indicator of changes in road construction/reconstruction amounts. Road construction varies directly with harvest volumes, and the relationship is straight line. We calculated the amounts for Alternative B; between alternatives. In the timber element, historical records show harvest volumes are the best indicator of changes in road construction/reconstruction amounts. Road construction varies directly with harvest volumes, and the relationship is straight line. We calculated the amounts for Alternative B; using this as a guide, we then extrapolated to get the amounts for the other alternatives. In the facilities element, the roads support uses by a variety of resource areas, but timber harvest volume still provides the best indicator. So we followed the same process as we did for the timber element, except we used historical mileage data for the facilities element. The costs are based on 1982 construction and reconstruction costs for arterials and collectors.

6. Describe Real Cost Increases

We did not attempt to calculate whether we have experienced any real cost increases on the Allegheny National Forest. It would be difficult for us to use our data base to come up with a valid trend analysis for individual activities over an extended period of time.

Table B-11 Summary of Costs Not Included in the FORPLAN Model

Practice/Activity	Reason for Not Including It	Cost Varies Among Benchmarks/Alter.	Range of Costs For Years in Alter. (M$)	Costs Calculated For Pre or Post FORPLAN
Program Management	Non-linear	yes	57,027-161,000	Post FORPLAN
General Administration	Non-linear	yes	105,820-167,322	Post FORPLAN
Developed Recreation [including roads]	Site Specific for Alter.	yes	136,404-210,371	Pre FORPLAN
Land Acquisition	Site Specific for Alter.	yes	1,620- 23,400	Post FORPLAN
Mineral Acquisition	Site Specific for Alter.	yes	1,168- 19,433	Post FORPLAN
Special Area Management [Mgmt. Presc. 8]	Site Specific	no	44	Post FORPLAN
Fisheries Management	No water AA's	yes	1,185- 8,373	Pre FORPLAN
Well Plugging [USA]	Site Specific for Alter.	no	600,000	Pre FORPLAN
Arterial & Collector Rd Construction Reconstruction Maintenance Maintenance [CWFS] Bridge Construction and Reconstruction	Site Specific for Alter.	yes	40,388-103,620	Post FORPLAN
Buildings & Admin.Sites	Specific for Alternative	yes	0- 800	Post FORPLAN

D. Benefits

1. Overview

The benefits we considered in our analysis can be separated into two categories: 1] priced outputs and, 2] non-priced outputs. Priced outputs can be subdivided into two areas: those outputs with values assigned in the market place or market outputs; and those outputs with values based on the consumer's willingness to pay, or non-market outputs. Non-priced outputs are those which are not assigned a value. This section discusses priced outputs.

All benefits are expressed in 1978 dollars, with no real price changes. We have calculated benefits either in the FORPLAN model analysis or by adding them later outside the model. We realize the benefit values at similar points in the production process; we value timber on the stump and recreation/wildlife user days (based on a 12-hour day) at the site where they are consumed.

2. Benefits in FORPLAN

We have attempted to calculate as many benefits as possible within the FORPLAN model. Each prescription includes benefits which directly result from the investments or activities, as well as those induced by them (such as big-game WFUD's in the timber yield composite which result from changes in age class structure created by timber harvesting). Table B-12 shows the benefits we included in FORPLAN for projects in each element, the values used, and where we obtained each value.

Table B-12 Benefits Calculated in FORPLAN

Element	Benefit	MIH Code	Unit	Value - 1978 $/unit	Source of Value
A	Dispersed Rec				
	SPNM	W03	RVD	9.28	1982 RPA *1
	SPM	W05	RVD	7.79	1982 RPA
	RN	W07	RVD	5.40	1982 RPA
B	Wilderness Use				
	SPMN	W03	RVD	9.28	1982 RPA
C	Wildlife				
	Big-Game	W41	WFUD	22.26	1982 RPA
E	Timber				
	Hardwood Sawtimber	X09	MBF	9.00-398.00	SIMAH #4
	Hardwood Rountwood	X10	MBF	0	Market *2
	Softwood Sawtimber	X06	MBF	10-56	Regional *3 Values
	Softwood Roundwood	X07	MBF	8-13	Regional Values
	Big-Game	W41	WFUD	22.26	1982 RPA

*1 - 1982 RPA - ADVENT computer definitions file [ADVENT*RUN.STD-DE/FY85RPA] referred to on pages D11-12 of - Technical Field Guide for the 1985 RPA Process, Amendment #1; June 11, 1982; values as of January 1982.
*2 - Market - pulpwood values have historically been low on the Allegheny National Forest, (approximately one dollar per MBF), and are an insignificant part of the total timber receipts. Therefore we assigned a value of zero to pulpwood.
*3 - Regional Values - Allegheny National Forest softwood values have historically been low since we sell only a small volume of softwood. In a recent study titled Biologic and Economic Feasibility of Coniferous Timber Production Systems for the Allegheny National Forest (Strauss and Bowersox, 1982), the authors found regional softwood prices and softwood prices outside of the region are higher than ANF softwood prices. These areas, however, have "stable" market conditions where supply and demand interact to maintain some uniformity of price over time. We have used a slightly modified regional value in our analysis [which is higher than our historical market prices], assuming that a stable market and higher prices will result if we significantly increase local softwood supply. The same assumption applies to both softwood sawtimber and softwood roundwood.
*4 - SIMAH - Simulation Model for Allegheny Hardwoods values are based on ANF and Hammermill stumpage values, including an increase in realization values which reflects increases in log grade and value as stands mature. ANF and Hammermill values were averaged to give a better indication of local values.

3. Benefits Calculated Outside FORPLAN

We had two main reasons for calculating some of the benefits outside of the FORPLAN model: 1) some were site specific and 2) some we could more accurately calculate once the FORPLAN model established the prescription assignments and schedule of outputs. These are a significant portion of the total benefits produced by each alternative; they constitute 34% to 43% of each. Table B-13 shows the benefits calculated outside of FORPLAN for projects in each element, the values used, and where we obtained each value.

Table B-13 Benefits Calculated Outside of FORPLAN

Element	Benefit	MIH Code	Unit	Value - 1978 $/unit	Source of Value
A	Developed Rec*2				
	SPMN	W03	RVD*3	9.28	1982 RPA*1
	SPM	W05	RVD	7.79	1982 RPA
	RN	W07	RVD	5.40	1982 RPA
	R	W09	RVD	3.90	1982 RPA
C	Wildlife				
	Small-game	WW8	WFUD*3	26.29	1982 RPA
	Non-game	W48	WFUD	8.90	1982 RPA
	Fisheries	WW7	WFUD	18.88	1982 RPA
E	Timber				
	Small-game	WW8	WFUD	26.29	1982 RPA

*1 - 1982 RPA - ADVENT computer definition file (ADVENT*RUN.STD-DE/FY85RPA) referred to on pages D11-12 of Technical Field Guide for the 1985 RPA Process, Amendment #1; June 11, 1982; values as of January 1982.

*2 SPMN = Semi-Primitive Non-Motorized
SPM = Semi-Primitive Motorized
RN = Roaded Natural
R = Rural

*3 RVD = Recreation Visitor Days (12 hours)
WFUD = Wildlife and Fish User Day (12 hours)

V. SOCIAL AND ECONOMIC IMPACT ANALYSIS

A. Current Social Situation

Area of Influence

The Allegheny National Forest's primary zone of influence is the northern Pennsylvania counties of Warren, McKean, Forest, and Elk. Some local influence also extends into various adjacent counties of Pennsylvania and New York State. These influences are due primarily to commerce (particularly timber, minerals, and construction), recreation, and relationships to the Seneca Nation of Indians, Allegany State Park in New York, and Cook Forest State Park in Clarion County, Pennsylvania. Non-local influence extends to the Pittsburgh area and to the Youngstown-Cleveland vicinity in Ohio.

Population

Resident population of the four-county area has been gradually declining since 1960, showing a decrease of 88 people in 1960-1970 and 799 persons in 1970-1980. However, two counties (Elk and Forest) showed population increase from 1970-1980, while McKean and Warren counties both had slight declines. The 1980 population of the four counties was 1.2 percent of the state of Pennsylania.

Table B-14 Population of Counties Primarily Affected by ANF Activities

	Population						% Change
COUNTY	1930	1940	1950	1960	1970	1980	1970 -1980
Elk	33,431	34,443	34,503	37,328	37,770	38,338	+1.5
Forest	5,330	6,227	5,331	4,954	4,926	5,072	+2.96
McKean	55,167	56,673	56,673	54,517	51,915	50,635	-2.5
Warren	41,453	42,789	42,698	45,582	47,682	47,449	-0.5
	135,381	140,132	139,139	142,381	142,293	141,494	-0.6

Historically, population fluctations have generally followed economic trends. Early area growth resulted from the timber industry in all four counties, followed later by the oil boom, particularly in McKean and secondarily in Warren and the other two counties.

Depletion of these resources helped produce occasional periods of population decline and subsequent increase, but timber generation, changes in oil and gas recovery methods, and general economic diversification helped lead to gradual overall population increase in the general area from 1900 to the 1960's. Since then, changes in birth rate, fertility, age structure, and outmigration have contributed to general population declines.

In the 1970's, planning agencies for both Warren and McKean counties projected population increases for their areas. For example, Warren County was projected to have increases of approximately 5-6000 people per decade, giving a population of over 63,500 by the year 2,000. Projections made for McKean County were for population increase to 60,000 people by the next century. To date, the projections have not been fulfilled. Unofficial expectation for Elk County is that the population will probably never exceed 50,000.

Primary population centers are Warren, Bradford, and St. Marys-Johnsonburg-Ridgway. Smaller communities of various sizes are present along with isolated homesteads and clusters.

In 1980, the four-county area in general had a higher percentage of young people below 14 and people aged 65 and over than the state percentage. In contrast, the percentages of adults 20-34 were less than the state averages. Median ages of persons in all counties except Elk were greater than the state, with Forest County showing the greatest difference in median age (35.5 in comparison to 32.1 state-wide).

Table B-15 Percentage of Population by Age Categories (1980)

	Elk	Forest	McKean	Warren	State
0- 4	6.9	5.4	6.8	7.1	6.3
5- 9	7.7	7.1	7.7	7.4	6.8
10-14	9.4	8.0	8.7	8.2	7.8
15-19	9.6	9.3	8.9	8.5	9.1
20-25	7.9	6.5	7.6	7.6	8.9
25-29	7.3	6.3	6.9	7.3	7.9
30-34	6.4	6.9	6.3	7.0	7.1
35-44	10.5	10.9	10.2	11.3	10.8
45-54	10.9	10.5	10.6	11.0	10.9
55-59	5.7	6.3	5.7	5.7	6.0
60-64	5.3	6.2	5.3	5.1	5.3
65-74	7.8	11.2	9.3	8.3	8.0
75+	4.6	5.4	6.1	5.3	4.9
Median Age	31.0	35.5	32.7	32.7	32.1

The 1980 minority group population of the counties was small but rather diverse. It has tended to increase in all counties since 1970. Most of this population lives in boroughs or in the townships near them. The number of minority group members is below 1.0 percent of the population in each of the four counties, in contrast to 10.2 percent state-wide.

Table B-16 1980 Minority Group Population

	Elk	Forest	McKean	Warren
American Indian	19	13	92	66
Black	13	11	96	47
Asian Indian	16	2	34	44
Chinese and Korean	25	3	46	30
Vietnamese	3	0	14	3
Pacific Islander	9	0	12	11
Japanese	7	2	8	11
Other	27	8	34	36
	119	39	336	248
Percentage of County Population	.3%	.8%	.7%	.5%

Workforce

All four counties have diverse local economies, although the proportion of the workforce varies considerably among several categories. Elk County is the most heavily industrialized.

Table B-17 Characteristics of Workforce by Percent - 1980

	EMPLOYMENT IN					
COUNTY	Services	Retail/ Wholesale	Manufacturing	Other	UNEMPLOYED	DISABILITY
Elk	8.6	13.0	55.0	9.0	6.7	7.7
Forest	13.1	18.3	28.3	20.5	9.1	10.7
McKean	10.5	17.3	39.1	17.1	7.1	8.9
Warren	10.4	22.9	35.1	17.0	5.8	8.8

Income

Income levels vary considerably among the townships and boroughs in the four-county areas.

Table B-18 Resident Population Income - 1980

COUNTY	PER CAPITA MEAN INCOME	FAMILY MEDIAN INCOME	MEDIAN FAMILY INCOME - RANGE AMONG MUNICIPALITIES
Elk	$6,422	$19,404	$11,806 - $22,312
Forest	5,691	15,492	10,938 - 17,813
McKean	6,133	17,580	15,242 - 20,738
Warren	6,563	19,160	14,107 - 22,676

Affected Groups

There are a number of categories of people who are affected by Forest management activities.

1. Local People

Timber operators are affected economically by management of the Allegheny National Forest. They encompass various combinations of ownership types and sizes.

They include small independents and large companies; new "first-generation" companies and multi-generational family operations; and individually owned businesses, father-son(s) enterprises, and larger family-owned companies. There is also a relationship between operators who buy timber contracts and independent contractors who only cut, haul, and/or process timber for them, but do not buy contracts. Of those involved in timber from the ANF, the majority come from Pennsylvania, particularly the four-county area, but several are based in New York. There are few, if any, who depend solely on ANF timber; most cut on private and state lands, as well, which reduces the impact of ANF timber volume goals.

Oil and gas operators include several categories, such as larger companies which have existed for a number of years; independents of various sizes, contractors, field workers, and others who do drilling, construction, timber cutting, tend wells, etc. The latter can be new, but many are long-term residents and businesses. There is also a concentration of OGM suppliers near Bradford. The operators, contractors, and suppliers are generally not totally dependent on operations within the national forest; many of these also work in other nearby areas of New York and Pennsylvania.

There is a strong local and regional tradition and acceptance of the lumber and OGM industries and employment within them. When possible, training, experience, and livelihood are often family occupations. However, trends in economic conditions and other factors may break this down and direct young people into other jobs and areas.

Construction contractors are an important economic group, particularly in support of timber, oil and gas operations, recreation construction, and other public and private endeavors.

Recreation is a major activity throughout the four-county area. Local people are involved as participants, particularly in hunting, fishing, and camping at developed sites, but also as suppliers of recreational opportunities through campground management, small businesses (e.g., stores and shops), marina operations, etc.

This activity is concentrated in the Allegheny Reservoir and river area, Clarion River, Cook Forest, Tionesta, and various parts of Elk County. It also occurs throughout the region on a more dispersed basis.

Due to ownership patterns, there are land and home owners who live in the Allegheny National Forest but do not necessarily work on it. They include both permanent and seasonal residents, who are affected by Forest management decisions.

Values of the counties' local population generally emphasize stability, family ties, limited mobility, desire for local control, multiple use of resources, liking for the rural/forested environment, pragmatic environmental consciousness, and reserve toward outsiders. Potential conflict may occur between year-round residents and seasonal users; between some local residents and those who want either extreme exploitation of resources or setting aside of areas; and between long-term residents and newcomers.

The Allegheny Reservation of the Seneca Nation of Indians is present just over the state boundary in New York. As of August 1982, the resident Native American population was 927 on the Allegheny Reservation and 2,154 on the Cattaragus. There are also non-reservation Native Americans present in the four counties, as indicated in Table B-16. The Seneca, in general, have a concern for and attachment to a number of areas in and near the Allegheny Reservoir, as well as for other portions of the four-county regions.

2. Regional and National People

Recreation, timber, and minerals resources are the forest outputs most used by regional people. People from Cleveland-Youngstown-Warren, Ohio, and Pittsburgh and Erie, Pennsylvania, tend to be the heaviest regional recreation users (camping, hiking, boating, hunting, fishing, snowmobiling, and trail hiking).

Regional people also may be owners or users of seasonal homes and camps. There are over 8,000 seasonal structures in the four-county area (on all land ownership types); many are owned by non-local residents.

Some regional people are interested in parts of the forest as potential wilderness. There are also special designated areas, such as the North Country Trail, Tionesta Scenic and Natural Areas, and Heart's Content National Natural Landmarks that are of interest to this group. State parks, game lands, and other areas of interest outside the forest also attract regional people.

There is also regional interest in timber and minerals, primarily oil, gas, and (outside of the ANF) coal.

B. Effects on the Local Economy

1. IMPLAN Model

The IMPLAN model was used to estimate local economic effects. IMPLAN was developed by the Forest Service as an input-output model using base data from the 1972 National Input-Output Model, updated in 1977, and disaggregated and rebalanced at the state and county levels. We did not change the existing data base.

The estimated amount of Forest Service expenditures were taken directly from the alternatives and local impacts were estimated using coefficients from the IMPLAN base data. All the values were then deflated to the 1977 base year. The data used in IMPLAN is summarized in planning records. Complete documentation of the model is available in the planning records.

2. Profile of Four-County Area-1977

Following are IMPLAN tables which provide an economic profile of the four-county area.

Table B-19 Current Situation of Employment by Sector That may be Directly Affected by ANF Decisions[1]

Sector	Emp. Comp. ($MM)	Total Gross Output ($MM)	Employment (1,000's of jobs)
11 Forestry and Fishery Products	0.57	3.02	0.05
12 Ag, Forestry, Fishery Services[2]	0.62	1.81	0.10
136 Logging Camps/Logging Contractor	1.02	8.26	0.13
137 Sawmills/Planning Mills, General	4.32	18.68	0.40
138 Hardwood Dimension/Flooring Mill	0.66	2.85	0.11
140 Millwork	1.12	5.41	0.12
144 Prefabricated wood buildings	0.11	0.66	0.01
146 Wood Pallets/Skids	0.42	2.00	0.04
148 Wood Products, N.E.C.	0.95	4.20	0.17
149 Wood Containers	0.29	1.06	0.04
150 Wood Household Furniture	0.34	0.99	0.03
159 Wood Partitions and Fixtures	0.98	2.71	0.09
164 Paper Mills except building paper	10.76	48.32	0.55
175 Paperboard Containers/Boxes	5.09	18.93	0.33
433 Retail Sales	42.35	94.55	5.85
441 Hotels/Lodging Places	1.43	3.92	0.44
447 Eating/Drinking Places	6.08	18.76	1.05
450 Amusement/Recreation Services	0.97	3.08	0.25

Table B-20 Employment by Aggregated Sector

Aggregated Sectors	Employee Compensation	Employment thousands of jobs	% employment of 4-county total
Forest Products	27.25	2.17	4
Recreation	8.48	1.74	4
Retail	42.35	5.85	12

- Discussion

  2,170 jobs were provided in the forest products aggregate sector. 1,740 were provided by the recreation/tourism aggregate sector. Each of these aggregate sectors comprise roughtly 4% of the jobs in the four-county area.

Table B-21 Exports from Four- County Area[3]

Forest Product-Related Sector	
Sawmills and Planning Mills, general	1.37
Logging Camps and Logging Contractors	.67
Hardwood Dimensions/Flooring Mill	.04
Prefabricated Wood Buildings	.03
Wood Pallets/Skids	.01
Wood Products, N.E.C.	.15
Wood Containers	.01
Wood Household Furniture	.01
Wood Partitions/Fixtures	.02
Paper Mills, except Building Paper	2.51
Paperboard containers/boxes	.19
TOTAL Forest Products-Related Exports	$5.01 M

TOTAL Exports from 4-County Area - $129.1 M

Percentage from Forest Products-Related Sectors - 3.8%

1 Data directly from 1977 Department Commerce tapes. No data manipulation.
2 Not all forestry related.
3 Not all raw material originates from within the 4-county area.

3. Effects of Alternatives

In each alternative, the ANF contributes roughly 5% to the area's employment.

Table B-22 Number of Jobs Attributable to ANF Management for Each Plan Alternative

Sector	Alternative A	B	C	D	E
Forest Products	272	433	751	485	525
Recreation/Tourism	832	696	734	805	867
TOTAL All Sectors	2,399	2,356	2,955	2,654	2,897

Because of the timber outputs and emphasis on the more developed forms of recreation, Alternative C will likely account for the most jobs in the 4-county area. The employment will be nearly equal between the forest products and recreation/tourism sectors. Significant increases over the current situation can be expected.

Alternative E will provide nearly as many total jobs as Alternative C, but the ratio between sectors changes. Alternative E offers fewer jobs than C in the forest products sector, but significantly more in the recreation/tourism sector.

Alternative D ranks third highest in total jobs attributable to the ANF. The alternative offers more jobs than Alternative C in the recreation/tourism sector, but significantly fewer jobs in the forest products sector. Forest products sector jobs are still higher than the current situation, Alternative B.

Alternative A ranks fourth in total jobs, but second highest in the recreation/tourism sector. The alternative ranks lowest in job production in the forest products sector because of the low timber harvests.

Alternative B, the Current Situation, offers the fewest number of jobs attributable to the Allegheny National Forest. It offers the fewest in the recreation/tourism sector, but significantly more than Alternative A in the forest products sector.

Table B-23 portrays the employment, by economic sector, for the 4-county area in 1977 and the employment attributable to each forest plan alternative.

- Column 1. Employment By Sector

  This column shows the number of jobs that each sector provided in 1977.

- Column 2. Aggregate Sector Total

  This column displays the total number of jobs provided in each of the two sectors displayed - forest products and recreation/tourism. The total number of jobs in the 4-county area is also shown.

- Columns 3, 5, 7, 9, and 11.

  These columns display the number of jobs, by sector, which can be attributed to management of the Allegheny National Forest. The total number of jobs attributable to the ANF is also shown.

- Columns 4, 6, 8, 10, and 12.

  These columns display the number of jobs by the two aggregate sectors.

Table B-23 Employment Summaries

SECTOR	1977 Four County Employment Totals: Col. 1 Emp. by Sector (# Jobs)	Col. 2 Agg. Sector Total # Jobs	Employment Caused by ANF Actions: Col. 3 Alt. A (# Jobs)	Col. 4 Agg. Sector Total # Jobs	Col. 5 Alt. B (# Jobs)	Col. 6 Agg. Sector Total # Jobs	Col. 7 Alt. C (# Jobs)	Col. 8 Agg. Sector Total # Jobs	Col. 9 Alt. D (# Jobs)	Col. 10 Agg. Sector Total # Jobs	Col. 11 Alt. E (# Jobs)	Col. 12 Agg. Sector Total # Jobs
FOREST PRODUCTS												
Forestry/Fishery Products	500		14.4		22.8		39.8		25.9		27.3	
Agriculture/Forestry	100		6.8		7.3		9.9		8.3		8.9	
Logging Contractors	130		52.1		85.2		150.8		96.9		101.7	
Sawmills/Planning Mills	400		99.4		181.3		357.7		237.0		177.2	
Secondary Wood Products	110		3.7		4.0		5.4		4.3		5.1	
Paper Manufacturing	550		96.0		131.9		187.1		112.8		204.9	
TOTAL-Forest Products		2,170[1]		272		433		751		485		525
RECREATION/TOURISM												
Hotels/Lodging	440		244.0		202.3		208.3		230.4		252.4	
Eating/Drinking	1050		356.9		310.8		341.7		352.1		391.4	
Amusement/Rec. Services	250		231.1		183.4		183.9		222.9		223.3	
TOTAL-Recreation/Tourism		1740		832		696		734		805		867
TOTAL attributable to ANF in all sectors	unknown		2399		2356		2955		2654		2897	
TOTAL # Jobs in 4-County Area (all sectors)	48390											

[1] This column will not total 2,170 jobs because the 1977 data contains a few other categories.

Economic impacts result from (1) Forest outputs being sold, (2) users of the Forest purchasing goods and services locally, and (3) the Forest Service purchasing goods and services from the local economy in order to perform management activities.

IMPLAN breaks the impacts into three categories:

- Direct impacts are the amount of income and number of jobs generated from the production and marketing of outputs and uses on the Forest.
- Indirect impacts result from the activities of supporting industries, i.e., those industries that produce and sell their products to the directly impacted industries.
- Induced impacts come from the income expenditures of employees and owners, of the direct or indirectly impacted industries, in the local economies. All three impact components are included in the response coefficients, thus, total impact can be displayed and analyzed.

The procedure for converting changes in Forest outputs into local economic impacts consists of the following steps:

- Identify the change in physical outputs.
- Determine the direct impact (dollars per unit of output).
- Distribute the impact to the appropriate industries.
- Adjust the values to constant dollars.

The physical outputs used in the IMPLAN model are timber volumes and wildlife/fish/recreation user days.

The amount of each output produced is taken from the Forest alternatives. The values for timber products were developed using data from market reports and local mills. The values for expenditures of recreation visitors were developed using data from:

- 1980 National Survey of Fishing, Hunting, and Wildlife Associated Recreation. U.S. Fish and Wildlife Service and U.S. Bureau of Census.
- 1980 Wisconsin Camper Survey - Recreation Resources Center, University of Wisconsin - Extension.

- Winter Recreation Visitor Study - Wisconsin 1979, Upper Great Lakes Regional Commission.
- Estimated Regional Duration Activity Occasions on National Forest Lands and Waters. USDA-Forest Service, 1984.

Values given in research publications were adjusted to portray the local economy of the Forest.

VI. ANALYSIS PRIOR TO DEVELOPMENT OF ALTERNATIVES

A. Introduction

The set of alternatives for the Allegheny National Forest are the product of a lengthy and complex analysis that sought to identify the major conflicts between planning problems, determine the potential capability to respond to these conflicts or problems, and identify the quantitative and qualitative trade-offs of responding to each problem.

As is explained and documented in Appendix A, the Allegheny National Forest identified four major planning problems based on the issues, concerns, and opportunities that were identified. The Forest also initially identified potential trade-offs based on the conflicting values implied within each planning problem. To assist in measuring the potential trade-offs within the problems, evaluation criteria were also developed early in the Forest planning process to guide the formulation of the FORPLAN model. Once the FORPLAN model was built and calibrated, the Forest performed an analysis with the model and developed a set of benchmarks, which were intended to determine the potential response to the problems and to facilitate measuring the economic trade-offs among alternatives. The Forest developed a total of eleven benchmarks. The purpose, objectives, assumptions, and results of these FORPLAN analyses are discussed in detail in this Section along with Section VIII. Based on the results of benchmarks and the competitive and complementary relationships that were identified in the analysis, alternatives were established which specified goals and objectives to be achieved in response to the forest planning problems.

B. Development of Minimum Management Requirements (MMR's)

1. Overview

Federal Regulations in 36 CFR 219.27 require the Forest to meet specific MMR's when implementing forest plans. These represent the minimum legal requirements, not necessarily the lowest level acceptable to the local public or to the agency. Most forest plan alternatives provide for resource conditions significantly enhanced beyond the legal minimums.

The MMR's cover a wide spectrum of resource concerns: resource protection, vegetative manipulation, silvicultural practices, even-aged management, riparian areas, soil and water, and plant and animal species diversity. The Forest ID Team consulted extensively with Resource Staff Specialists, the District personnel local and national research publications, historical management experiences here, and each member's own professional knowledge when developing the responses to the MMR's. The Team members worked closely in formal and informal meetings to determine the best response to each requirement and to ensure that duplication did not occur.

Least cost analysis also played an important role in establishing the MMR's. While resource cost/yield responses are generally not accurate enough to justify detailed cost analysis of alternative methods of meeting MMR's, we have made every effort to include what we feel are the least cost methods. Much of this is based on professional experience. Where possible we included choices in the FORPLAN model to meet MMR's. The timber intensities are an example (36 CFR 219.27(c)(4)). Even where we have not included alternative choices for a specific activity within a given prescription and Analysis Area, the model does have the opportunity to pick the same prescription on a different AA where the response to the MMR is a little different due to that AA's characteristics. This provides FORPLAN the opportunity to pick the MMR response-AA combination which is most efficient. For example, MMR's require the Forest to regenerate an AA within five years of the final harvest cut. Each timber type for Prescription 3 has a different set of activities which we found to be most efficient and effective in meeting this objective.

Prescription 2 on that same AA has a different set of activities which ensure the stand structure retains the sapling size class. The FORPLAN model can then compare the cost-efficiency of 2 and 3 on any given AA or can compare efficiencies between AA's and pick the one which most effeciently produces the required yield. It can also choose a prescription calling for no timber harvesting. The FORPLAN solution, in this sense, can select the most cost-efficient method of meeting the MMR's and supplying harvest volumes.

As a result of reviewing the MMR's, the ID Team decided to use at least one of the following options, or a combination of these options, to meet the individual MMR's.

- Standards and Guidelines
- Constraints
- Project development
- Monitoring
- Analysis of spatial feasibility of prescriptions for an alternative
- FORPLAN analysis
- Analysis Outside of FORPLAN

The following discussion elaborates on each method used.

a. Standards and Guidelines

Management activities combine to produce integrated multiple-use prescriptions. Standards and Guidelines for each prescription assure we will meet appropriate MMR's. Activity costs within the FORPLAN prescriptions reflect the manpower, equipment, and other input needed to meet the requirements. The cost of achieving the MMR's reflects the influence of different site characteristics (Analysis Areas).

The following is a summary of the criteria we employed to deal with MMR's in Prescriptions as standards and guidelines:

- Base response to meet MMR's on the most cost-effective method of meeting the objective.

- Provide some choice in the FORPLAN model related to MMR's. For example, activities required to meet MMR's vary by analysis area, though there is not much variation within a given prescription on a specific analysis area. Activities also vary by prescription (2 has different activities to meet MMR's than does 3). FORPLAN then picks the most efficient prescriptions (and MMR's) for each alternative.
- The specific timber mangement activities included in the prescription to meet MMR's are based on research conducted on the Forest as well as historical experience. These activities vary by timber type.
- Meet MMR's through coordination activities for projects.

Example - The discussion in Section VI.B.1. adequately displays this type of MMR response.

b. Constraints

We found FORPLAN constraints to be most effective in meeting MMR's that required specific activity timing or specific allocations. The process we followed when developing the MMR's (see Section VI.B.1. above) ensured these constraints did not overlap with any MMR's met through any other method.

Example - We generally are not able to final harvest oak and regenerate it to the oak type; other hardwood species take over. We assume research will develop the technology to regenerate oak to oak within the first decade. Regulation 36 CFR 219.27(c)(3) requires adequate restocking to meet the species composition objective for the prescription. Therefore, we have applied a constraint in the first decade which does not allow any oak to oak final harvest.

c. Project Development and Planning

In some cases, compliance with MMR's depends on specific site conditions and information. Although we have developed some general Standards and Guidelines to ensure we meet these requirements, we will address the specific MMR response in more detail in project planning.

Example - Section 219.27(a)(3) of the Regulations requires protection by "utilizing principles of integrated pest management". Standards and Guidelines generally address this requirement, but since the precise application of integrated pest management principles depends on site specific information, we will address it in more detail in project plans.

d. FORPLAN Analysis and Solutions

The allocation and schedule from FORPLAN solutions will assure we meet certain MMR's. These include those requirements which depend on the set of Prescriptions included in the FORPLAN solution.

Example - Section 219.27(c)(1) of the Regulations requires "no timber harvesting shall occur on lands classified as not suited for timber production". In part, lands are not suited if they are not cost-efficient in meeting the Forest objectives over the planning horizon. The FORPLAN solution will not choose timber harvesting prescriptions on these lands.

e. Spatial Feasibility of Prescriptions for an Alternative

We also achieve MMR's through the spatial arrangement of prescriptions and through assigning specific Management Prescriptions to Management Areas. This follows the alternative development and modeling phases of the planning process. We took the FORPLAN solutions for each alternative and mapped them using District personnel to ensure no spatial problems existed which would restrict implementation.

Example - Section 219.27(d)(2) of the Regulations requires cut openings not to exceed 40 acres. We mapped the regeneration cuts called for in one of our early benchmark runs on sample areas scattered across the Forest. By carefully locating and adjusting the cut locations, we were able to implement the prescriptions with only minor adjustments to the allocation. Using this same process, we will ensure the preferred alternative does not violate the 40-acre limit. If we turn up any significant violation, we will impose specific FORPLAN constraints to correct the problem and map the new solution.

f. Monitoring

Systematic and frequent monitoring of the Forest Plan will determine whether we are achieving the MMR's specified in the categories listed above. Some requirements, however, can only be met through monitoring. We cannot set Standards and Guidelines, use constraints, or develop other methods to assure we achieve them.

Example - Section 219.27(c)(5) of the Regulations states "Harvest levels based on intensified management practices shall be decreased no later than the end of each planning period if such practices cannot be completed substantially as planned." Obviously we cannot meet this requirement without careful monitoring of planned and actual intensive management practices.

g. Analysis Outside of FORPLAN

Analysis completed outside of FORPLAN insures we will meet some of the MMR's, particularly those which require us to consider non-priced benefits or social values when selecting prescriptions.

2. Display of Allegheny National Forest Minimum Management Requirement Responses

Table B-24 displays a key word summary of each of the minimum management requirements specified in 36 CFR 219.27 along with a brief statement which describes how we assured Forest compliance with it. Those handled through Standards and Guidelines list the FSM number reference, while those which were met using constraints contain reference to the specific constraint. The forest planning records contain a more detailed description of our response to the MMR's.

Table B-24 Minimum Management Requirements

CFR Reference	Key Word Summary	Method of Addressing MMR's	Brief Statement of Compliance
219.27 (a)	Resource Protection		
(1)	Conserve soil and water	a	- Standards and Guidelines (2500)
		c,d	- Coordination Activity costs
		c,d	- Timber yield adjustment factor (see steep and riparian adjustments) in Section III.E.1.h.)
(2)	Minimize hardards from flood, fire, and erosion	a	- Standards and Guidelines (2500)
		c,d	- Coordination Activity costs
		c,d	- Timber yield adjustment factor (see steep and riparian adjustments, Section III.E.1.h.)
		c,d	- Fire Suppression and Presuppression costs
(3)	Control pests	c,d	- Pest management costs
		a	- Standards and Guidelines (3400)
(4)	Protect streams, streambanks, lakes, and wetlands	a	- Standards and Guidelines (2500)
		c,d	- Coordination Activity costs
		c,d	- Timber yield adjustment factor (see steep and riparian adjustments, Section III.E.1.h.)
		c,d	- Dam management costs
(5)	Provide for and maintain diversity	a	- Standards and Guidelines (1900 and 2600)
(6)	Maintain viable fish and wildlife populations	a	- Standards and Guidelines (2600)
(7)	Assess prescriptions for potential impacts	c,d	- Coordination Activity costs
		c,d	- Cost built into other activities
(8)	Protect critical habitat for threatened and endangered species	c,d	- Coordination Activity costs
		a	- Standards and Guidelines (2600)

*Legend

a - Standards and Guidelines
b - Constraints
c - Project Development and Planning
d - FORPLAN Analysis and Solutions
e - Monitoring
g - Analysis Outside of FORPLAN

Table B-24 (con't) Minimum Management Requirements

CFR Reference	Key Word Summary	Method of Addressing MMR's	Brief Statement of Compliance
219.27 (a)	Resource Protection (con't)		
(9)	Designate ROW corridors	a	- Standards and Guidelines (2700)
(10)	Road design appropriate	c,d	- Part of road design costs
	for planned uses	c,d	- Transportation planning costs
		a	- Standards and Guidelines (7700)
(11)	Reestablish vegetative	a	- Standards and Guidelines (7700
	cover within ten years		and 2500)
	of road construction	c,d	- Coordination Activity costs
		d	- Costs included in timber values
(12)	Maintain air quality	a	- Standards and Guidelines (2100)
		c,d	- Coordination Activity costs
219.27(b)	Vegetative Manipulation		
(1)	Prescription best suited	d	- Prescription development
	to multiple-use goals	c,d	- Coordination Activity costs
		d	- Cost built into other activities
		d	- FORPLAN Analysis
(2)	Assure land adequately	a	- Standards and Guidelines (2400)
	restocked	c,d	- Timber regeneration costs
		b	- Structural Constraints (Section VIII.B.)
(3)	Prescriptions not chosen	d	- Recreation values included
	primarily due to dollar	d	- Wildlife values included
	return or greatest	d	- Numerous timing options
	timber output	g	- Social values considered
		d,g	- FORPLAN/Non-FORPLAN Analysis
(4)	Consider effects on	a	- Standards and Guidelines (1900,
	residual trees and		2400, and 2600)
	adjacent stands	d	- Timber yield tables
		c,d	- Timber Activity costs
		e	- Spatial feasibility
(5)	Avoid permanent impair-	a	- Standards and Guidelines (2500)
	ment of site and con-	c,d	- Coordination Activity costs
	serve soil and water	d	- Timber yield adjustment factor
(6)	Prescriptions have	a,c	- Standards and Guidelines (1900,
	desired effect on non-		2200, 2300, 2400, 2600, and
	timber resources		2800)
(7)	Be practical in terms of	a,c	- Standards and Guidelines (2400
	transportions, harvest		and 7700)
	requirements, and costs		

Table B-24 (con't) Minimum Management Requirements

CFR Reference	Key Word Summary	Method of Addressing MMR's	Brief Statement of Compliance
219.27(c)	Silvicultural Practices		
(1)	No harvest on non-suited land except salvage or to meet non-timber objectives	b	- Common constraints for special areas (Section VII.B.)
		d	- Timber yield adjustment factor (see rocky adjustments, Section III.E.1.h.)
		a,c	- Standards and Guidelines (2400)
(2)	Timber sale schedule gives allowable sale quantity for each period	f	- Monitoring
(3)	Cut only if restocking assured in five years	a,c	- Timber activities and costs
		b	- Structural constraints (Section VII.B.)
(4)	Cultural treatments for multiple-use or to promote crop tree growth	a	- Standards and Guidelines 2400 and 2600)
		c,d	- Prescription intensities for timber
		d	- FORPLAN Analysis
(5)	Decrease harvest levels if intensified management practices cannot be completed.	f	- Monitoring
(6)	Even-aged cutting protect other resource values	d	- Timber yield adjustment factor (see VQO and riparian adjustment, Section III.E.1.h)
		c,d	- Coordination activity costs
(7)	Use timber harvest to prevent pest damage	a,c	- Standards and Guidelines (3400)
219.27(d)	Even-aged Management		
(1)	Locate openings to achieve desired multiple-use objectives	a	- Standards and Guidelines (2400, 2500, 2300, and 2600)
		d	- Timber yield adjustment factor (see opening adjustment, Section III.E.1.h.)
		c,d	- Coordination Activity costs
		e	- Spatial feasibility
(2)	Clearcut size limits	a,c	- Standards and Guidelines (2400)
		e	- Spatial feasibility

Table B-24 (con't): Minimum Management Requirements

CFR Reference	Key Word Summary	Method of Addressing MMR's	Brief Statement of Compliance
219.27(e)	Riparian Areas	a	- Standards and Guidelines (2500)
		d	- Timber yield adjustment factor (see riparian adjustment, Section III.E.1.h.)
		c,d	- Coordination activity costs
219.27(f)	Soil and Water	a	- Standards and Guidelines (2500)
		d	- Timber yield adjustment factor, See riparian adjustment, Section III.E.1.h.)
		c,d	- Coordination activity costs
219.27(g)	Diversity	a,c	- Standards and Guidelines
		d	- Prescription choices in FORPLAN

C. Displayed Benchmarks

1. Purpose of the Benchmark Analysis

The purpose of the benchmarks is to define the Forest's potential capability to respond to the planning problems, to define the maximum economic and biological resource production opportunities, to determine the compatibilities and conflicts between market and non-market objectives, and to define the range within which integrated alternatives will be developed. Consequently, benchmarks on the Allegheny National Forest were developed to explore the maximum response to individual values, benefits, or outputs associated with the planning problems, identify the biological production limits for significant resources, and determine the most cost-efficient level of production on the Forest. An evaluation of these benchmarks allowed the Forest to identify the competitive and complementary relationships that existed between planning problems, outputs, and allocations. It was then possible to use the benchmark analysis to formulate alternatives which recognized the competitive and complementary factors that existed.

Benchmarks 1 through 11 are a combination of FORPLAN and Non-FORPLAN information. Benchmarks 12 through 15 address the maximum potential of RVD's by ROS class as required in the regulation 36 CFR 219.12(a)(1)(ii). These benchmarks were done outside FORPLAN but based on coefficients used in the model. Benchmark 16 is the current management requirement in the regulation (36 CFR 219.12(a)(1)(iii)(D)(2)). Benchmark 17 is the minimum Wilderness benchmark.

2. Common and Structural Constraints

The ID Team identified legal requirements, policy direction, minimum management requirements, and technical requirements which each benchmark and alternative had to meet in order to be feasible to implement. Each FORPLAN Benchmark includes these constraints. Section VII.B. contains additional detail on the rationale behind using these constraints. Table B-25, which follows, displays the common and structural constraints we used in the benchmarks as well as our specific rationale for using each of them.

Table B-25 Common and Structural Constraints for all Benchmarks

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Common Constraints				
Non-declining yield	Minimum	Greater than or equal to previous decade	1-15	The planned sale for any future decade shall be equal to or greater than the planned sale for the preceding decade. This ensures a non-declining supply of timber volume throughout the planning horizon as required in the National Forest Management Act (NFMA) regulations 36 CFR 219.16(a)(1).
Long-term sustained yield	Maximum	Less than or equal to LTSY	15	The planned sale is not greater than LTSY. This ensures the planned sale can be maintained. NFMA regulation 36 CFR 219.16(a)(1).
Perpetual timber harvest	Minimum	Greater than or equal to LTSY	15	Forest inventory at the end of the planning horizon should be great enough to sustain future harvest at LTSY. NFMA regulation 36 CFR 219.16(a)(2)(iv).
Rotations based on 95% of culmination of mean annual increment	Minimum	Greater than or equal to 95% CMAI	1-15	Allow harvest options to begin at 95% of the culmination of the mean annual increment. Ensure a minimum tree size before final harvest. NFMA regulation 36 CFR 219.16(a)(2)(iii) and the Forest Service Manual (FSM) 2413.21.
Low demand projection for oil and gas and minerals development (acres)	Equality	65,500	1-15	Require 65,500 acres, distributed over all analysis areas, to be allocated to high oil, gas, and minerals management goals. Since development of private subsurface rights are not controlled by Forest Service, a projection or estimate was developed that will apply to all alternatives. It will show the effects and opportunities of oil and gas development on surface resource development.

Table B-25 (con't) Common and Structural Constraints for all Benchmarks

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Special Areas (acres)	Equality	5,903	1-15	Assign Tionesta Research, Tionesta Scenic Area, Hearts Content, and Kane Experimental Forest to Management Prescription 9.1 in FORPLAN. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as Management Prescription 8.10. Additional costs were added because management prescription 8.10 was handled outside the model.
Structural Constraints				
Limit final harvest on AA's older than 90 years	Maximum (acres)	33%	1- 2	Maximum of 33% of 90+ age classes in each timber type (AH, NH, and Oak) can be final harvested in period 1, and 33% in period 2. Existing volumes and regeneration problems not reflected in inventory data.
Aspen final harvest	Equality (percent)	50% 25%	1 2-6	Final harvest 50% of all acres allocated 1.1 in period 1 and 25% in periods 2-6. If management prescription 1.1 is assigned, an even distribution of age classes is required to generate the WFUD coefficients in the prescription.
Delay final harvest in oak	Maximum (acres)	0	1	Zero acres can be assigned Oak to Oak final harvest prescription in period 1. Current technology is not available to regenerate Oak.
Analysis Areas	Equality (acres)	503,306	1-15	Ensure all acres of the Forest are assigned in the model.

3. Description of Individual Benchmarks

a. Benchmark 1

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - With a reduced set of Minimum Management Requirements

2) Purpose

We have designed this benchmark to show the effects of not meeting selected minimum management requirements (MMR's), an analysis requirement described in 36 CFR 219.27. The opportunity costs for the MMR's result from comparing this Benchmark 1 with Benchmark 2.

3) Constraints in Addition to the Common and Structural Constraints

We did not impose any constraints other than common and structural constraints. See below for list of activities deleted from this benchmark.

4) Assumptions and Model Specifications

- The objective function is maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- We have decided to address the opportunity costs for only those items which have created the greatest national concern and whose costs we have more distinctly represented in the model. The following is a brief summary of those selected for analysis:

  Cost of maintaining minimum viable populations (36 CFR 219.27(a)(6)),
  Cost of maintaining plant and animal diversity (36 CFR 219.27(a)(5)),
  Resource protection costs (36 CFR 219.27(a)(1) thru (4), (7) and (8); 36 CFR 219.27(e); 36 CFR 219.27(f)),
  Volume reductions which correspond with the MMR's for resource protection.

The analysis we conducted has captured the significant cost and yield reductions necessary to implement these MMR's (except for the soil and water activities included in stumpage prices, such as seeding, fertilizing, and installing waterbars). The Land Management Planning process records contain specific details about the constraints or activities we included or excluded when completing this analysis.

- This run does not include any resource coordination or protection activities.
- This run does not contain any timber volume adjustment which results from resource protection and coordination activities.
- Since to our knowledge all of the benchmarks maintain minimum viable populations and plant and animal diversity, there is no opportunity cost to develop for meeting these MMR's.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2.

b. Benchmark 2

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - With Minimum Management Requirements

2) Purpose

- This benchmark serves as a point of comparision when analyzing all of the problem statements. It establishes the mix of outputs and prescriptions which maximize PNV for the Allegheny National Forest, using market values for timber and assigned values for Recreation and Wildlife Visitor Days while meeting all MMR's.
- It serves as a basis for identifying opportunity costs associated with the MMR's. Comparing Benchmark 1 with Benchmark 2 completes this analysis.
- This benchmark provides the basis for preparing the opportunity costs and trade-off analysis in the incremental analysis of alternatives.
- This benchmark fulfills the requirements in 36 CFR 219.12(e)(1)(iii) to "estimate the maximum present net value of those resources having an established market value or an assigned value".

3) Constraints in Addition to the Common and Structural Constraints

We did not impose any additional constraints.

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- This run includes resource protection and coordination activities.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run includes the mix of non-modeled activities and outputs (developed recreation, fisheries, small game, and non-game) which maximize value, a high level of outputs.

c. Benchmark 3

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - Delay Herbicide Use

2) Purpose

This run shows the effect on PNV and timber harvest volumes of delaying the use of herbicide for 20 years. This run addressed the "Quantities of Timber Volume" problem statement.

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
No herbicide use for 20 years.	Show effect on PNV and Timber harvest volume of delaying use.	Maximum of 0 acres of herbicide application	1-2	Delay hebicide use and wait to see if the deer browsing/understory competition/regeneration problem subsides.

4) Assumption and Model Specifications

- If the deer herd is lowered to ecologically acceptable levels, the natural reproduction may emerge through the fern/striped maple understory without the need for chemical control. This Benchmark estimates the effects of not using herbicide for two decades based on the above hypothesis.
- The Allegheny National Forest data base does not contain any information about the spatial arrangement of the areas which have dense fern/striped maple understories. We also do not have any information on the characteristics of the analysis areas which have this understory vegetation. We do not know if it is spread evenly across all of them or if it is concentrated in areas which are not ready for harvest? Sampling completed on other studies indicates about half of the area has a significant fern/striped maple understory. For this Benchmark we have assumed it is spread evenly across all analysis areas.
- Many forest managers feel the number of acres with a dense fern/striped maple understory problem have been slowly increasing over the last 30 years. When more light reaches the forest floor, it stimulates growth of this type of understory vegetation. Research has confirmed this is occurring, but we do not have any reliable estimates of its significance Forest-wide. In this benchmark we assume 60 percent of every acre assigned a thinning intensity will require chemical control while only 50 percent of every acre assigned a final harvest intensity requires similar treatment.
- Analysis completed outside FORPLAN shows chemical control as the most cost-effective method of treating the understory vegetation. Chemical control is the only technique included in this Benchmark. Requiring mechanical techniques would produce a substantially lower PNV with the same results.
- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.

- This benchmark includes resource protection and coordination activities.
- This benchmark includes timber volume adjustments resulting from resource protection and coordination activities.
- This benchmark contains the same level of non-modeled activities and outputs as Benchmark 2.

d. Benchmark 4

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - High OGM Demand

2) Purpose

- This benchmark run addressed the "Private Oil and Gas Development" problem statement.
- It shows the effect of a high level of OGM development (for reserved or outstanding mineral rights) on total PNV, resource outputs, and prescription allocation.

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
Assign high OGM prescriptions on acres expected to receive intensive OGM development	Show effect on PNV, resource outputs, and prescription assignment.	188,640 acres	Phase in gradually over 15 periods.	High OGM prescriptions represent intensive development. Development will not occur all at once.

4) Assumptions and Model Specifications

- The high OGM demand is the level of development the Forest experienced between 1980 and 1982 (See Section IV.B, on demand assumptions).
- Development will not occur all at one time. We have assumed approximately 90 percent of it will occur within the first five decades, with the remainder in decades 6 thru 15.

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- Certain areas on the Forest have a higher potential for intensive OGM development than others. We have assigned these areas a higher percentage of the high OGM development prescriptions than the areas which have a low potential for development.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run includes resource protection and coordination activities.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2.

e. Benchmark 5

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - 100% RARE II Wilderness

2) Purpose

- The purpose of this benchmark is to determine potential capability to respond to the Wilderness problem statement by estimating the Wilderness capacity of the Forest.
- It shows the effect on PNV and resource outputs of assigning all of the RARE II areas (15 areas on 33,972 acres) to wilderness.

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
Assign all RARE II areas to wilderness prescription	Show the effect on PNV and all resource outputs	33,972 acres	1-15	This benchmark emphasizes wilderness opportunities

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- This run includes resource protection and coordination activities.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2.

f. Benchmark 6

1) Title: Maximum Present Net Value - Market Outputs Valued

2) Purpose

- This benchmark addresses the problem statements titled "Quantities of Timber Volume" and "Integration of Outstanding Rights Mineral Development."
- It fulfills the requirement in 36 CFR 219.12(e)(1)(iii)(A) to "include an estimate of the mix of resource uses, combined with a schedule of outputs and costs, which will maximize the present net value of those major outputs that have an established market price."

3) Constraints in Addition to the Common and Structural Constraints

We did not impose any additional constraints.

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value only sawtimber and softwood roundwood and developed recreation.
- This run includes resource protection and coordination activities.
- This run includes timber volume adjustments resulting for resource protection and coordination activities.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2.

g. Benchmark 7

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - Non-declining Sawtimber Yield

2) Purpose

- This addresses the problem statement entitled "Quantities of Timber Volume."
- Sawtimber volume is far more important to local and national markets than roundwood. Sawtimber volume fluctuates widely from decade to decade in all of the benchmarks. This benchmark shows the effect on PNV and all resource outputs of requiring a non-declining flow of sawtimber volume.

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
Require non-declining sawtimber harvest	Show effect on PNV and all resource outputs	N/A	1-15	Sawtimber is more important than total volume in the marketplace

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- This run includes resource protection and coordination.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run contains the same level of non-modeled activities and outputs as Benchmark 2.

h. Benchmark 9

1) Title: Maximum Present Net Value - Non-Market Outputs Valued

2) Purpose

- This addresses all of the problem statements, with particular emphasis on the statements entitled "Mix of Recreation Opportunity" and "Wilderness Recommendations."
- It estimates the mix of WFUD's and RVD's by ROS Class which produces the highest PNV.
- This fulfills the requirement in 36 CFR 219.12(e) (1)(iii) for the wildlife, recreation, and wilderness resource areas.

3) Constraints in Addition to the Common and Structural Constraints

We did not impose any additional constraints.

4) Assumptions and Model Constraints

- The objective function is to maximize PNV.
- The objective function includes production costs for all resource areas but only the output values for WFUD's and dispersed RVD's.
- This run includes resource protection and coordination activities.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2, plus some dispersed recreation facilities which were not compatible with Benchmark 2.

i. Benchmark 10

This benchmark was done in two stages. Stage 1 established the maximum timber volume production for 50 years. Stage 2 takes the volumes determined in Stage 1 and selects the prescriptions which most efficiently produce these volumes.

Stage 1

1) Title: Maximum Timber Volume Production for 50 years

2) Purpose

- This addresses the problem statement entitled "Quantities of Timber Volume."
- It establishes the maximum biological production potential for the timber resource together with showing the associated costs and benefits. This fulfills the requirement in 36 CFR 219.12(e)(1)(ii) for the timber resource area.
- Establish the upper bound for timber resource production which sets the upper production limit for alternatives.

3) Constraints in Addition to Common and Structural Constraints

We did not impose any additional constraints.

4) Assumptions and Model Specifications

- The objective function is to maximize total timber volume production for hardwood sawtimber and roundwood and softwood sawtimber and roundwood for the first 50 years of the planning horizon.
- Sawtimber values, softwood roundwood values, values for Wildlife and Fish Visitor Days, and values for Recreation Visitor Days contribute to total PNV, but max PNV was not the objective function.

Stage 2

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - Maximum Timber Volume Production for 50 years

2) Purpose

- This addresses the problem statement entitled "Quantities of Timber Volume."
- It selects the prescriptions which most efficiently produce the maximum timber production levels that the maximize timber volume benchmark established for the first five decades. Therefore, it sets the most efficient mix of prescriptions to meet maximum timber volume production established in the maximize timber volume benchmark.

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
In decades 1-5 require at least the volumes established in the maximize timber volume benchmark	Determine highest PNV and most efficient prescriptions for meeting maximum timber volume	215 MMCF	1	Must require high harvest level or else model will choose a lower level
		215 MMCF	2	
		215 MMCF	3	
		215 MMCF	4	
		215 MMCF	5	

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- This run includes resource protection and coordination activities.
- This run includes timber volume adjustments resulting from resource protection and coordination activities.
- This run includes the same level of non-modeled activities and outputs as Benchmark 2.

k. Benchmark 11

1) Title: Maximum Present Net Value - Market and Non-Market Outputs Valued - Minimum Level Management

2) Purpose

- This benchmark fulfills the requirements of 36 CFR 219.12(e)(1)(i) which requires the Allegheny National Forest to define "the minimum level of management which would be needed to maintain and protect the unit as part of the National Forest System, together with associated costs and benefits."

3) Constraints in Addition to the Common and Structural Constraints

Constraint	Purpose	Constraint Amount	Time Period	Constraint Rationale
Require 9.1/ 9.11 on all acres	Determine costs and benefits associated with mini-mum level management of the ANF	N/A	1-15	Prescriptions 9.1 and 9.11 are the only prescriptions which ade-quately model minimum manage-ment

4) Assumptions and Model Specifications

- The objective function is to maximize PNV.
- Value sawtimber, softwood roundwood, Wildlife and Fish Visitor Days, and Recreation Visitor Days.
- Prescription 9.1 includes the minimum level of management required for us to administer intensive oil and gas development for reserved and outstanding mineral rights.
- This run includes resource protection and coordination activities.
- This benchmark does not contain any non-modeled activities and outputs except for induced outputs for non-game wildlife and fish which are not in FORPLAN.

k. Benchmarks 12 - 15

1) Title: Maximum RVD's by ROS class.

2) Purpose

These benchmarks are in partial fulfillment of the requirement of 36 CFR 219.12(e)(1)(ii), which requires the maximum physical potentials of significant goods to be estimated.

3) Constraint: These benchmarks were calculated outside FORPLAN.

4) Assumptions and Model Specifications:

- The maximum recreation yield by ROS class is an aggregate of the maximum dispersed RVD's, plus the maximum trail RVD's, plus the maximum developed RVD's.
- Dispersed RVD's and trail RVD's have been modeled in FORPLAN. To get the maximum potential yield for each ROS class, the high intensity production coefficient was multiplied by the total suitable acres on the Forest.
- Developed recreation RVD's have been modeled outside FORPLAN. The maximum is defined as the most intensive recreation scenario developed through the non-FORPLAN modeling process [noted in the process records as Concept I (market)].

l. Benchmark 16

1) Title: Current situation benchmark.

2) Purpose

The benchmark fulfills the requirements of 36 CFR 219.12(e)(2), which requires an estimate of the amount of goods and services produced if current management direction continues.

3) Constraints: See Alternative B.

4) Assumption and Model Specifications

The development of Alternative B is based on current management. The costs and outputs in Alternative B indicate the results if this direction were to continue. It is felt Alternative B fulfills the requirement for a current situation benchmark run.

m. Benchmark 17

1) Title: Minimum Wilderness benchmark.

2) Purpose

Estimate the effects on goods and services if the ANF provided no Wilderness.

3) Constraints

Allow no Wilderness management prescriptions to be selected.

4) Assumptions and Model Specifications

Any benchmark which contains no Wilderness prescription fulfills this benchmark requirement.

D. Benchmark Analysis

Not applicable - significant timber forests only.

E. Quantities of Outputs in the Max PNV Market/Non-Market Versus Max PNV Market Benchmark Runs

The maximum PNV benchmark, based on those resources with established market values, showed significant differences from the maximum PNV benchmark which included values for both market and non-market outputs. These two benchmarks are identical in all respects except in terms of outputs valued in the objective function. The non-FORPLAN portion of these two benchmarks were held constant in the analysis, therefore, any changes are a result of the FORPLAN solution.

The PNV of the Max PNV Market run is $233 million lower (52 percent) than the Max PNV Market/Non-market run. This indicates the significant contribution that non-market outputs make to the total value of the benchmarks and alternatives. In addition, if the values of the non-market outputs were added to the Max PNV Market run, the PNV would still be $66 million less (or 14.9 percent) than the PNV of the Max PNV Market/Non-market benchmark run. This illustrates the induced affects of each benchmark run on the allocation processs.

Table B-26 compares the management prescription allocation for the two benchmarks. In the Max PNV Market benchmark run, all acres were assigned a timber harvesting prescription with the exception of those 6,000 acres constrained to special area management. Of the 503,000 total Forest acreage, 459,000 acres or 91 percent were allocated to even-aged management prescription 3. This allocation indicates that when only market outputs are valued, the even-aged management prescription of 3 and 4 (softwood) are more efficient than the uneven-aged management prescription 2 or the management prescription that emphasizes recreation and wildlife, 6.1. The allocation for the Max PNV Market/Non-Market run is also almost entirely (93%) in timber harvesting prescriptions. Approximately 35,000 acres or seven percent of the Forest is allocated to management prescriptions which do not harvest timber. Of these 35,000 acres, 6,000 represent acres constrained to special area management. The remaining 29,000 acres or six percent of the Forest was allocated to management prescription 6.1 and prescriptions which emphasize recreation and wildlife. These 29,000 acres represent areas which are marginal for timber management and are better managed for recreation and wildlife to maximize PNV.

Outputs in the Max PNV Market/Non-Market vs. Max. PNV Market Benchmark Run

A summary of selected outputs for the two benchmark runs can be found in Table B-27. As a result of valuing only market outputs, the LTSY increased from 119.0 MMBF/year to 127.0 MMBF/year. This is a result of more acres being allocated to timber harvesting prescriptions. Harvest volumes are at LTSY in both benchmarks, and the total timber volume increase between the Max PNV Market/Non-market run and the Max PNV Market run averages about 80 MMBF/decade.

A comparison of RVD's by ROS class (Table B-27) reveals that RVD's decrease in the Max PNV Market run in all categories except rural (WO9). There was no change in rural RVD's because these were a result of the non-FORPLAN allocation, which was held constant between the runs. The decrease in RVD's in the three remaining ROS classes is a result of two changes in the allocation. The first was a shift in the management prescriptions. Management prescription 6.1 produces semi-primitive motorized RVD's. Management prescriptions which manage timber result in roaded-natural RVD's. Shifting from management prescription 6.1 to management prescriptions 3 and 4 caused a reduction in the number of semi-primitive motorized RVD's.

The decrease in semi-primitive motorized RVD's would have been offset by an increase in roaded natural RVD's, if not for the second significant change in the allocation. When the objective function went from valuing RVD's and WFUD's to not valuing these outputs, the recreation/wildlife intensity choosen went from generally high to generally low intensity. This caused an overall reduction in RVD's produced in all ROS classes included in the FORPLAN model (i.e., WO3, WO5, and WO7). This reduction more than offset any increase in roaded natural RVD's that would have resulted for the shift from 6.1 to 3 and 4. In summary, the shift in intensities caused RVD's in all ROS classes, except rural, to be reduced. The simultaneous change in allocation from management prescription 6.1 to management prescription 3 and 4 caused an even larger reduction in the semi-primitive RVD's.

Wildlife and fish user days also showed a general decline between the Max PNV Market/Non-market run and the Max PNV Market run. This decline was a result of shifting from high recreation/wildlife intensities to low recreation/wildlife intensities.

Outputs in the Max PNV Market/Non-Market vs. Max PNV Market Benchmark Run

Table B-26 Management Prescription Allocations for Max. PNV Market/Non-market Benchmark Run and Max. PNV Market Benchmark Run

		Max. PNV: Market/Non-market		Max. PNV: Market	
		M acres Assigned	% of Forest	M acres Assigned	% of Forest
Aspen, Grouse	1	0	0	0	0
Uneven-age, non-game	2	62	12	4	1
Even-age, turkey, deer	3	388	77	459	91
Even-age, softwood	4	19	4	34	7
Wilderness	5	0	0	0	0
Recreation, Wildlife	6.1/6.4	29	6	0	0
Even-age 10 yr SPNM 30 yr	6.2	1	1	1	1
Wetland wildlife	6.3	0	0	0	0
Long Rotation Primitive	6.5	0	0	0	0
Developed Recreation	7	0	0	0	0
Special Area	8	6	1	6	1
Minimum Level	9.1	0	0	0	0

Table B-27 Summary of Outputs for Max PNV Market/Nonmarket and Max PNV Market Benchmark Runs

		Max. PNV: Market/Non-Market	Max. PNV: Market
LTSY (MMBF/Year)		119.0	127.0
Total Timber Volume (MMBF)			
Decade	1	1193	1274
	2	1193	1274
	3	1193	1274
	4	1193	1274
	5	1193	1274
	10	1193	1274
	15	1193	1274
Hardwood Sawtimber (MMBF)			
Decade	1	491	474
	2	678	776
	3	715	814
	4	780	800
	5	891	902
	10	510	608
	15	566	442

Outputs in the Max PNV Market/Non-Market vs. Max PNV Market Benchmark Run

Table B-27 (con't) Summary of Outputs for Max PNV Market/Nonmarket and Max PNV Market Benchmark Runs

		Max. PNV: Market/Non-Market	Max. PNV: Market
Wildlife Users Days (MWF UD's)			
Decade	1	3742	3676
	2	4601	4283
	3	4978	4533
	4	5029	4588
	5	5010	4532
	10	5012	4536
	15	4978	4485
RVD's By ROS Class (MRVD's)			
W03: Semi-Primitive Non-motorized			
Decade	1	61	50
	2	133	100
	3	154	100
	4	176	100
	5	187	100
	10	187	100
	15	187	100
W05: Semi-Primitive Motorized			
Decade	1	1466	622
	2	1513	669
	3	1513	669
	4	1531	688
	5	1531	688
	10	1531	688
	15	1531	688
W07: Roaded Natural			
Decade	1	13109	10544
	2	14475	10862
	3	15559	10900
	4	16974	11268
	5	17619	11390
	10	17573	11344
	15	17573	11344

Outputs in the Max PNV Market/Non-Market Vs. Max PNV Market Benchmark Run

Table B-27 (con't) Summary of Outputs for Max PNV Market/Nonmarket and Max PNV Market Benchmark Runs

		Max. PNV: Market/Non-Market	Max. PNV: Market
W09: Rural			
Decade	1	4353	4353
	2	6764	6764
	3	8099	8099
	4	11095	11095
	5	11095	11095
	10	11095	11095
	15	11095	11095

Outputs in the Max PNV Market/Non-Market vs. Max PNV Market Benchmark Run

F. Summary of the Benchmark Results

1. Introduction

This section presents a short summary of the important results and the significant trade-offs for each benchmark. Benchmark 2, "Maximum Present Net Value - Market and Non-Market Outputs Valued - With Minimum Management Requirements," serves as the base benchmark of comparison for all of the benchmarks. This section includes only the title and results for each benchmark.

For a description of the specific purposes and assumptions for each benchmark, see Section VI.C. Section VIII.C.2. discusses in detail the reasons for the changes in PNV from that shown for Benchmark 2.

All comparisons are made with the Max PNV Market, Non-Market Benchmark. (Benchmark 2).

2. Maximum Present Net Value - Market and Non-Market Outputs Valued - With a Reduced Set of Minimum Management Requirements (Benchmark 1)

a. This benchmark has the highest PNV, 3% above Benchmark 2.
b. Changes in timber receipts are more significant than changes in timber management costs.

Decade	Timber Costs	Timber Receipts
1	+ 2%	+ 1%
2	+ 5%	+16%
3	+ 4%	+15%
4	+ 4%	+18%
5	+ 2%	+ 1%
10	0	-26%
15	0	+28%

c. Recreation costs average 1% lower each decade.
d. Wildlife costs average 10% higher each decade.
e. Long-term sustained yield increases by 10% from 119 MMBF/YR to 131 MMBF/Yr.
f. RVD's average 2% lower each decade.
g. Wildlife Element WFUD's average 2% higher each decade.

h. Total volume harvested averages 10% higher in Decades 1 thru 5, 10, 15, with the following specific changes for roundwood and sawtimber.

Decade	Sawtimber Change	Roundwood Change
1	+ 6%	+12%
2	+12%	+10%
3	+13%	+ 6%
4	+15%	+ 3%
5	+ 7%	+25%
10	-16%	+29%
15	+30%	+16%

i. The following prescription acreage assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	24,738
3 /3.41	428,785
4 /4.01	18,823
5	0
6.1/6.4	24,025
6.2	33
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

j. The following major prescription assignment shifts from Benchmark 2 resulted:

Prescription	Acreage Change	% Change
2	-37,000 ac.	-61%
3	+40,700 ac.	+11%
6.1	- 3,700 ac.	-13%

k. Acres by harvest type vary significantly from Benchmark 2.

Decade	Final Harvest	Thinning	Selection Cut
1	+ 4%	+ 34%	-61%
2	+19%		-59%
3	+34%	+ 18%	-61%
4	+26%		-59%
5	+26%	+191%	-61%

Conclusions

a. Implementing resource coordination and protection activities results in a 3% reduction in PNV.
b. MMR's affect prescription 3 more than 2, so 3 looks more attractive financially without MMR's.
c. Thinning intensities are more attractive without MMR's, partially as a result of modeling limitations related to how we used the timber adjustment factor. Section III.E.1.h. explains how we used timber volume adjustment factors to account for inclusions of land which will not produce timber or which will have reduced yields for multiple-use reasons. Some of the yield reductions apply to final harvest but not thinnings, but we did not have room in the model to enter separate factors for each of these treatment types. Actually, thinning intensities should show a 4% lower volume reduction than final harvests. This would increase thinning intensity yields and make thinnings more financially attractive in Benchmark 2 and all benchmarks which include MMR's. It might then increase the amount of thinning intensities selected in Benchmark 2. The effect would be to decrease the difference in the acres of thinnings between Benchmark 1 and Benchmark 2.
d. Timber receipts, in the benchmark without MMR's, increase more dramatically than costs, presumably because costs are more similar across all Analysis Areas than are returns from the volume harvested. Because of the wide variation in timber values, a slight increase in the volume harvested on the more valuable AA's could increase total receipts by a larger proportion.

3. Maximum Present Net Value - Market and Non-Market Outputs Valued - With Minimum Management Requirements (Benchmark 2)

a. This benchmark serves as the base benchmark for comparison for all of the other benchmarks. Section VIII.C. displays the outputs, costs, and significant activity amounts for this benchmark.
b. The following prescription acreage assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	61,688
3 /3.41	387,707
4 /4.01	19,274
5	0
6.1/6.4	27,712
6.2	23
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

4. Maximum Present Net Value - Market and Non- Market Outputs Valued - Delay Herbicide Use (Benchmark 3)

a. The change in total PNV is insignificant-a decrease of 1%.
b. Changes in timber receipts are more significant than changes in timber management costs.

Decade	Timber Costs	Timber Receipts
1	- .3%	-5.2%
2	-1.4%	+2.9%
3	-1.9%	+5.8%
4	-5.8%	-7.8%
5	-2.0%	-4.7%

c. Long-Term Sustained Yield decreases 2% from 119 MMBF/YR to 117 MMBF/YR.
d. Total volume harvested in the first 5 Decades averaged 2% lower each Decade, with the following specific changes for roundwood and sawtimber.

Decade	Sawtimber Change	Roundwood Change
1	-10%	+ 3%
2	-13%	+14%
3	+ 9%	-18%
4	+10%	-25%
5	- 2%	0

e. The following prescription acreage assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	56,255
3 /3.41	385,388
4 /4.01	19,295
5	0
6.1/6.4	34,868
6.2	627
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

f. Prescription shifts from Benchmark 2 - There is a shift of 7,200 acres from prescriptions 2 and 3 to prescription 6.1, which results in a 7,200 acre increase in the semi-primitive motorized ROS class.

g. Acres by harvest type vary significantly from Benchmark 2.

Decade	Final Harvest	Thinning	Selection Cut
1	-31%	+13%	+26%
2	+ 9%		-73%
3	- 9%		+26%
4	+ 6%		-73%
5	- 8%		+26%

h. WFUD's dropped 9% in the first decade, and show insignificant variation from Benchmark 2 in Decades 2 thru 5.

i. Herbicide use drops to zero in Decades 1 and 2, but is 28% to 47% higher in Decades 3 to 5.

Conclusions

a. The changes in total PNV and long-term sustained yield are insignificant.

b. Though we are able to hold herbicide use to zero during Decades 1 and 2, herbicide use will increase significantly (28% to 47%) in Decades 3 to 5, if reduced deer browsing does not significantly increase crop tree regeneration.

c. If our assumptions concerning the magnitude of the understory problem and its spatial arrangement are correct, the analysis shows we will suffer little economic or resource loss by delaying use of herbicide for 20 years. This would give us the chance to see what the effects of reduced deer browsing are on crop tree regeneration in areas having a significant fern/striped maple understory component. However, we do not have any information which will help us assess the validity of our assumptions. This is a data need we must immediately fill during implementation. We will then be in a better position to evaluate the results of this benchmark.

5. Maximum Present Net Value - Market and Non-Market Outputs Valued - High OGM Demand (Benchmark 4)

a. Total PNV decreases 5% from Benchmark 2.
b. The following average changes occurred in element costs, outputs, returns/values over the first five decades:

Element	Costs	Outputs	Value	Receipts
Timber	- 5%	See (d) below		-4%
Recreation	- 6%	RVD's -9%	-10%	
Wildlife	-29%	WFUD's -1%	- 5%	

c. Long-term sustained yield decreases 3% from 119 MMBF/YR to 115 MMBF/YR.
d. Total volume harvested in the first 5 decades averaged 2.7% lower.

Average sawtimber harvest = -2.3%
Average roundwood harvest = -1.8%

e. The following prescription acreage assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	43,235
3 /3.41	415,371
4 /4.01	17,348
5	0
6.1/6.4	20,428
6.2	22
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

f. The following major prescription assignment shifts from Benchmark 2 occurred:

Prescription	Acreage Change	% Change
6.1	- 7300	-25%
4	- 1900	-10%
3	+27700	+ 7%
2	-18500	-30%

g. A 7,300 acre shift from semi-primitive motorized to roaded natural coincides with the shift from prescription 6.1 to 3 shown above.

h. Changes in the number of acres by harvest type coincided with the shift from 2 to 3, with most of the increases in 3 going to the final harvest intensity.

i. The following shift occurs in the OGM prescription assignments:

Prescription	Benchmark 2	Benchmark 4	Acreage Change
1.11	0	0	0
2.21	33	81	+ 48
3.41	61340	182117	+120777
4.01	4347	7390	+ 3043
9.11	0	0	
TOTAL	65720	189588	+123868

j. The following total changes occur in road construction and reconstruction financed with federal money during the first five decades:

Activity	Change In Mile	%Change	Cost Change	%Change
Road Constr	- 29	-12%	- 942M	-13%
Road Recon	-279	-16%	-5188M	-16%

The total miles of private and other public road construction and reconstruction will increase significantly, perhaps by as much as several hundred percent, due to the intensive private road construction which occurs in OGM developments.

k. The total cost of OGM administration increases by $23,070,000 or 286% in the first five decades.

Conclusions

a. With the objective of maximizing present net value, the best mangement for intensive oil and gas development is prescription 3.41.
b. The high level of OGM development we have projected results in a minor decrease in long-term sustained yield (3%) but a significant reduction in total PNV (5%) (Item c below provides insight into why PNV drops).
c. Before making this benchmark, we wondered whether the increased road building by OGM developers on the large acreage devoted to intensive oil and gas development in the high OGM demand scenario and the decrease in our road building costs, there would result in a higher total PNV. Even though we recognize that all of the OGM costs are not related to road building, and even though we have excluded the benefits received from the sale of the privately owned minerals in the marketplace, it seemed like the PNV for the high development scenario might increase. The results of this benchmark, however, show the total cost of oil and gas administration exceeds the benefits derived from the reduced Forest Service cost road building in the intensive oil and gas development areas.

6. Maximum Present Net Value - Market and Non-Market Outputs Valued - 100% RARE II Wilderness (Benchmark 51

a. Total PNV decreases 3% from Benchmark 2.
b. The following average changes occurred in element costs, outputs, returns/values over the first five decades:

Element	Costs	Outputs	Value	Receipts
Timber	-5%	see (d) below		-7%
Recreation	-2%	RVD's -3%	-3%	
Wildlife	-6%	WFUD's -2%	+1%	

c. Long-term sustained yield decreases 7% from 119 MMBF/YR to 110 MMBF/YR.
d. Total volume harvested in the first five decades averaged 7% lower each decade, with the following specific changes for roundwood and sawtimber.

Decade	Sawtimber Change	Roundwood Change
1	- 9%	-6%
2	-12%	0
3	- 7%	-8%
4	- 7%	-8%
5	- 7%	-5%

e. The following prescription acreage assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	60,865
3 /3.41	359,673
4 /4.01	17,458
5	33,972
6.1/6.4	24,626
6.2	23
6.3	0
6.5	0
7	1,000
8	5,691
9.1/9.11	0

f. Major prescription shifts from Benchmark 2 are the following:

Prescription	Acreage Change	% Change
6.1	- 3,100 acres	-11%
5	+34,000 acres	infinite
4	- 1,800 acres	- 9%
2	- 800 acres	- 1%
3	-28,800 acres	- 7%

g. The shift of 30,700 acres from roaded natural and 3,300 acres from semi-primitive motorized to semi-primitive non-motorized corresponds with the prescription shifts shown above in item f.

h. Acres by harvest type vary significantly from Benchmark 2.

Decade	Final Harvest	Thinning	Selection Cut
1	-12%	-3%	- 8%
2	- 9%		+10%
3	- 9%	-3%	- 8%
4	- 7%		+10%
5	- 6%		- 8%

Conclusions

a. The primary shift which results from wilderness allocation when our objective is to maximize PNV, is the removal of land from even-aged management, prescription 3. Only 9% of the RARE II land areas were already assigned to prescriptions which preclude timber harvesting.

b. Long-term sustained yield and timber harvest volume in the first five decades dropped significantly by 7% and PNV declines by 3%.

7. Maximum Present Net Value - Market Outputs Valued (Benchmark 6)

a. Section VI.E. (page B-140) describes the results of this benchmark and provides a comparison with Benchmark 2.

b. The following prescription assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	3,832
3 /3.41	458,466
4 /4.01	34,083
5	0
6.1/6.4	0
6.2	23
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

8. Maximum Present Net Value - Market and Non-Market Outputs Valued - Non-declining Sawtimber Yield (Benchmark 7]

a. PNV decreases 3% from Benchmark 2.
b. Changes in timber receipts are more significant than changes in timber management costs:

Decade	Timber Costs	Timber Receipts
1	-23%	+ 5%
2	- 5%	+ 2%
3	-22%	-24%
4	-15%	-30%
5	-19%	-46%
10	-14%	+44%
15	-24%	+48%

c. Long-term sustained yield decreases 14% from 119 MMBF/YR to 103 MMBF/YR.
d. Total volume harvested in the first five decades averages 14% less each decade, with the following specific changes for roundwood and sawtimber:

Decade	Sawtimber Change	Roundwood Change
1	+15%	-35%
2	-15%	- 4%
3	-20%	- 4%
4	-28%	+ 5%
5	-36%	+39%
10	+26%	-33%
15	+17%	-17%

e. The following prescription assignments occurred:

Prescription	Acres
1 /1.11	0
2 /2.21	28,529
3 /3.41	388,527
4 /4.01	9,926
5	0
6.1/6.4	68,744
6.2	678
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

f. The following major prescription assignment shifts resulted from Benchmark 2:

Prescription	Acreage Change	% Change
6.1	+41,000 acres	+ 143%
3	+ 800 acres	0%
6.2	+ 700 acres	+2848%
2	-33,200 acres	- 54%
4	- 9,300 acres	- 48%

g. The shift of 41,700 acres from roaded natural to semi-primitive motorized (+41,000 acres) and to semi-primitive non-motorized (+700 acres) corresponds with the shift from prescriptions 2 and 4 to 6.1 and 6.2.

h. Acres by harvest type vary significantly from Benchmark 2.

Decade	Final Harvest	Thinning	Selection Cut
1	+127%	-97%	- 96%
2	+ 4%		-100%
3	+ 31%	-83%	- 96%
4	- 30%		+ 6%
5	- 26%	+23%	- 96%

i. The following average changes occurred in element costs, outputs, and values over the first five decades:

Element	Costs	Outputs	Value
Recreation	+ 2%	0	+3%
Wildlife	+13%	0	+5%

Conclusions

a. Non-declining even flow (NDEF) of sawtimber results in a 14% decrease in the long-term sustained yield, the total volume harvested in the first five decades, and the total sawtimber volume harvested in the first five decades.
b. Timber receipts and sawtimber volume do not change significantly in the first 2 decades, but they do decrease quite significantly in decades 3 to 5. Overall, NDEF of sawtimber seems to provide stability to timber receipts, eliminating large fluctuations between decades.
c. NDEF of sawtimber increases the number of acres not needed for timber harvesting, with most of the decrease coming from prescriptions 2 and 4.
d. Both thinning and selection cuts become less desirable with NDEF of sawtimber required. The increased volumes from thinnings are not needed or are not financially efficient in achieving this objective.

9. Maximum Present Net Value - Non-Market Outputs Valued (Benchmark 9)

a. Total PNV decreased 8% from Benchmark 2.
b. Timber receipts average 93% less and timber management costs average 84% less in the first five decades.
c. Recreation costs, outputs, and values vary significantly from Benchmark 2.

Decade	RVD Change	Value Change	Cost Change
1	+20%	+50%	-11%
2	+13%	+40%	-11%
3	+ 9%	+34%	-11%
4	+ 5%	+28%	-10%
5	+ 4%	+26%	-11%
10	0	+26%	-11%
15	0	+26%	-11%

d. Wildlife costs, outputs, and values vary significantly from Benchmark 2.

Decade	WFUD Change	Value Change	Cost Change
1	+ 2%	+86%	+76%
2	+ 3%	+70%	- 2%
3	+10%	+66%	- 6%
4	+21%	+74%	+19%
5	+28%	+83%	+32%
10	+31%	+85%	+28%
15	+33%	+88%	+28%

e. Long-term sustained yield drops 92% from 119 MMBF/YR to 12 MMBF/YR.

f. Total harvest, sawtimber harvest, and roundwood harvest all decreased 92%.

g. The following prescription acreage assignments occurred:

Prescription	Acreage
1 /1.11	0
2 /2.21	0
3 /3.41	65,720
4 /4.01	0
5	0
6.1/6.4	430,684
6.2	0
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

h. The following major prescription assignment shifts from Benchmark 2 occurred:

Prescription	Acreage Change	% Change
2	- 61,700 acres	-100%
3	-322,000 acres	- 83%
4	- 19,300 acres	-100%
6.1	+403,000 acres	+140%

i. The shift of 403,000 acres of roaded natural to semi-primitive motorized corresponds with the shift from prescription 2, 3, and 4 to 6.1.

Conclusions

a. Prescription 6.1 has the highest PNV for recreation and wildlife values.
b. There is a dramatic shift from prescriptions calling for timber harvesting (2, 4, 3) in Benchmark 2 to prescription 6.1 in Benchmark 9. The only acres still assigned to timber harvesting prescriptions are those with high intensity oil and gas development. High intensity OGM prescriptions were constrained to apply to 65,720 acres. In this instance, 3.41 was assigned since it produces the highest PNV for recreation and wildlife values of all the other OGM prescriptions (1.11, 2.21, 4.01, 9.11).
c. Maximizing the PNV of recreation and wildlife values reduces total PNV by 8%.
d. There is a dramatic decrease in total harvest volume and long-term sustained yield of 92%.

10. Maximum Present Net Value - Market and Non-Market Outputs Valued - Maximum Timber Volume Production for 50 Years (Benchmark 10)

a. Total PNV decreases 5% from Benchmark 2.
b. Changes in timber management costs are more significant than the changes in timber receipts.

Decade	Timber Receipts	Timber Costs
1	+22%	+27%
2	- 2%	+26%
3	- 6%	+23%
4	- 1%	+29%
5	- 8%	+19%
10	- 3%	+ 3%
15	+82%	+ 9%

c. Changes in the recreation element for the first five decades are not significant - RVD's do not change, values decrease 1% and costs increase 1%.
d. Changes in the wildlife element for the first five decades are not significant, except for costs - WFUD's decrease 1%, values decrease 3%, and costs decrease 9%.
e. Long-term sustained yield increases by 14% from 119 MMBF/YR to 136 MMBF/YR.

f. Total volume harvested in the first five decades averaged 14% higher, with the following specific changes for roundwood and sawtimber:

Decade	Sawtimber Change	Roundwood Change
1	-14%	+33%
2	- 1%	+35%
3	+13%	+15%
4	+ 8%	+25%
5	0	+57%
10	+49%	-12%
15	+46%	+ 7%

g. The following prescription assignments occurred:

Prescription	Acreage
1/1.11	0
2/2.21	82,731
3/3.41	377,831
4/4.01	16,568
5	0
6.1/6.4	0
6.2	0
6.3	0
6.5	0
7	1,000
8	5,902
9.1/9.11	0

h. The following major prescription assignment shifts from Benchmark 2 occured:

Prescription	Acreage Change	% Change
2	+22,000 acres	+ 36%
4	+16,600 acres	+ 86%
6.1	-28,700 acres	-100%
3	- 9,900 acres	- 3%

i. The shift of 28,700 acres from semi-primitive motorized to roaded natural corresponds with the shift from prescription 6.1 to 2 and 4.

j. Acres by harvest type vary significantly from Benchmark 2:

Decade	Final Harvest	Thinning	Selection Cut
1	-15%	+ 64%	+33%
2	+ 4%	+43,900 ac.	- 8%
3	-20%	+ 81%	+41%
4	0%	+64,300 ac.	0
5	-12%	+2198%	+41%

Summary of Benchmark Results

There were zero acres of thinning in Decades 2 and 4 in Benchmark 2.

Conclusion

a. Maximizing timber volume production for the next 50 years results in a significant increase in long-term sustained yield of 14%, but a significant decrease in PNV of 5%.
b. Costs of timber management increase at a higher rate than receipts, since areas with lower production efficiency are called into solution.
c. To obtain the increased volume production, increases must be made to both the areas of land assigned to timber management as well as the intensity of management (more thinnings). Thinnings tend to maximize volume production over the short run (next 50 years).
d. The effect on total recreation and wildlife RVD's is minimal, although there is a significant change in the type of experience provided.

11. Maximum Present Net Value -- Market and Non-Market Outputs Valued - Minimal Level Management (Benchmark 11)

a. Total PNV decreases 73% from Benchmark 2.
b. Timber outputs, costs, and receipts decrease to zero.
c. Long-term sustained yield decreases to zero.
d. RVD's decrease by 85%, their value decreases by 77%, and recreation management costs decrease by 99%.
e. Wildlife costs, outputs, and values all decrease significantly: WFUD's decrease 50% and costs decrease 100%.
f. All acres are assigned to prescriptions 9.1/9.11.

Prescription	Acres
9.1	437,586
9.11	65,720

g. All acres shift to semi-primitive motorized except for 65,700 acres of high intensity oil and gas development which are assigned roaded natural.

Conclusions

a. Of all outputs, WFUD's are least affected by minimum level mangement, averaging 50% less during the first 5 decades.

b. PNV drops dramatically by 73%.

12. Maximum ROS Benchmarks (Benchmarks 12-15)

a. The table below is a summary of the ROS potential on the ANF.
b. PNV drops dramatically by 73%.

ROS Benchmarks (in MRVD's in the 5th decade)[1]

Recreation Category	12 SPNM (W03)	13 SPM (W05)	14 RN (W07)	15 R (W09)
Disp. RVD's	1,414	14,587	8,979	0
Trail RVD's	167	1,509	5,125	0
Dev. RVD's	0	638	5,443	18,365
TOTAL MRVD's[2]	1,581	16,734	19,547	19,365

13. Current Situation Benchmark (Benchmark 16)

This benchmark is met through Alternative B, which is a current situation alternative.

14. Minimum Wilderness Benchmark (Benchmark 17)

All benchmarks except Benchmarks 5, 12, and 16 have 0 acres of Wilderness and meet the requirements for the minimum Wilderness benchmarks.

1 All investments would be made within the first 50 years. Therefore, the maximum potential yield would be analyzed by the 5th decade.
2 These are not cumulative across benchmarks. Benchmarks 2 and 9 show maximum mix of ROS classes.

Summary of Benchmark Results

VII. FORMULATION OF ALTERNATIVES

A. Introduction

1. A forest planning alternative is a mix of management prescriptions applied in specific amounts to achieve desired goals and objectives.

To be viable, alternatives must:

- Exist between maximum and minimum resource potential of the Forest.
- Facilitate analysis of opportunity costs, of resource use, and environmental trade-offs among alternatives.
- Facilitate evaluation of present net value, benefits, and costs of achieving various outputs as well as values that are not assigned monetary values.
- Show a different way to address and respond to major public issues, management concerns, and resource opportunities (ICO's).
- Represent the most cost-efficient combination of management prescriptions that can meet the objectives of the alternative.
- State the condition and uses that will result from implementation.
- State what goods and services will be produced including timing and flow of outputs and the costs and benefits generated.
- State the resource management standards and guidelines used.
- State the purpose of the management direction used.

Formulating alternatives is Step 5 in the Forest planning process (page B-2), following the Analysis of the Management Situation. During the Analysis of the Management Situation, a determination was made of the ability of the Forest to respond to the Forest planning problems by supplying goods and services. Maximum and minimum output levels were established. These levels form the range within which the alternatives were developed. Two specific alternatives are required. One alternative must respond to and incorporate the RPA program tentative resource objectives.

Another must reflect the current and expected level of goods and services produced should current management be continued (the "no-action" alternative). The process leading to the final set of Forest Plan alternatives can be explained in a series of steps.

Step 1 - Issues were identified through public involvement. Internal management concerns were added to the list of issues (further explained in Appendix A). These issues and concerns were reviewed by an interdisciplinary team and resulted in a set of planning problems to be analyzed in the Forest planning process.

Step 2 - A comprehensive multi-resource data base was formed based on the identified planning problems and stored in a computer retrieval system.

Step 3 - A set of management prescriptions were prepared to represent a variety of possible ways and intensities to manage the Forest in response to the Forest's planning problems.

Step 4 - Analysis areas with similar physical and biological attributes were identified and mapped. The capability, suitability, and management opportunities of specific areas of the Forest were considered in this step.

Step 5 - We developed a variety of management prescriptions as options to apply on the analysis areas identified in Step 4.

Step 6 - Resource outputs and the associated costs and dollar values that would result when a prescription was implemented were calculated and entered into the computer model FORPLAN.

Step 7 - Demand was estimated for the resources involved in the planning questions.

Step 8 - Supply potentials or benchmarks were determined using the FORPLAN computer model and through estimates made outside the model. Benchmarks were established to explore the maximum response to individual values, benefits, or outputs associated with the planning problems, to identify the biological limits for significant resources,

and to determine the most cost-efficient level of production on the Forest.

Existing resource supply and projected demand were compared to supply potentials of each benchmark. Opportunities to address the planning problems were identified by comparing existing and projected demand to potential production levels. These potentials, when compared to the Current Direction, indicate opportunities and/or need for change. This step concluded the Analysis of the Management Situation.

Step 9 - Alternative goals and objectives were established to provide a broad range of options for future management of the Forest and to provide a broad range of response to the Forest's planning problems. The range of response was limited to levels less than or equal to the supply potentials estimated in the benchmark analysis. Descriptions were written to define the resource management intent for each alternative.

Step 10 - The FORPLAN model was again used to estimate the outputs and cost for each alternative by reflecting the objective of the alternative through a given set of constraints. This step was repeated as necessary to assure the constraints were properly reflecting the objective of the alternative.

Step 11 - The results of the FORPLAN analysis for each alternative were evaluated to assure conformance with laws, policies, and guidelines. Refinements were made to insure that each alternative could be achieved.

Further information on the FORPLAN model is present in Section III of this Appendix.

The alternatives presented in the Final EIS is the product of an iterative analysis process that had its origins in the benchmark analysis. As was indicated in Section VI of this Appendix, we performed a benchmark analysis with the FORPLAN model in order to determine the Forest's potential response to the planning problems and to identify the complimentary and competitive relationships that existed among the planning problems, outputs, and constraints.

An initial set of benchmarks was defined to determine the maximum response to the values, benefits, or outputs within each Forest planning problem.

The following discussion summarizes the sequence of FORPLAN runs from benchmarks to final alternatives, as well as what was learned from each situation and how it was used to make the adjustments in the sequential run.

Step 1 - Following completion of the FORPLAN data base and model calibration, initial benchmarks were run. Spatial feasibility was tested by the Districts on a portion of the Forest. Concern arose about high timber volumes and spacing of regeneration harvests. We learned what the cost-efficient solutions were for each benchmark.

Step 2 - Three plan alternatives representing a wide range of outputs were developed. District ID Team members mapped the solution on a portion of the Forest. These alternatives and maps were used at a public meeting. The public developed ideas for additional alternatives.

We also further adjusted and calibrated the FORPLAN model as a result of this step.

Step 3 - Another generation of benchmarks were run but not the complete set. We felt that the benchmarks in Step 1 above provided enough information to proceed with second generation alternatives.

Following Ranger/Staff review of benchmarks, the timber volumes were further calibrated. After several more benchmarks, we felt the model was adequately calibrated. All displayed benchmarks and alternatives were run using one data set after completion of Step 3.

Step 4 - The Forest Management Team developed the goals, objectives, and management direction for a second generation of plan alternatives. Results from previous benchmarks were used to develop the alternatives, particularly prescription assignments from the different objective functions.

FORPLAN runs were then made for each Forest Plan alternative using the goals and objectives developed by the Management Team. Solutions were mapped and adjustments were made to the FORPLAN formulations to model the spatial problems and opportunities.

Step 5 - Alternatives were developed, and the incremental constraint analysis was performed. Maps were also developed for each alternative.

See Appendix A (pages A-27 to A-35) and Appendix B, Sections VI.F. and VIII.C. for discussion of competitive and complimentary relationships among problem statements and resource potentials. Also, see the above for a discussion on what was done to assure cost-effective solutions which are feasible.

Changes Made as a Result of Comments on the Draft EIS

The analysis in this appendix has been revised and expanded to address public comments and internal concerns in the Draft EIS. Changes that effect the analysis were made in FORPLAN and outside FORPLAN.

Changes in FORPLAN:

- No herbicide use for 15 decades in Alternative B (ref. EIS Appendix C, pages C-42 to C-44);
- Change Management Area allocation in Alternative D. Add 7,000 acres of Management Area 1, removing it from Management Area 6.1. Increase Management Area 6.2 by 15,000 acres, reducing Management Area 6.1 by 15,000 acres to compensate (ref. EIS Appendix C, pages C-47 to C-50);
- Prohibit conversion from Oak to Allegheny hardwoods in Alternative D (ref. EIS Appendix C, page C-50;
- Provide for a minimum of 15,000 acres of old growth in Alternative D.

Changes outside of FORPLAN:

- Provide a range of alternatives for ORV trails. The amount of planned ORV trail construction in the alternatives is Alt. A = 0 percent of 1977 ORV EIS, Alt. B = 100 percent, Alt. C = 75 percent, Alt. D = 100 percent, and Alt. E = 125 percent (ref. EIS Appendix C, Pages C-32 to C-33);

- Do not develop Sugar Bay resort but plan new motel/restaurant complex adjacent to Allegheny Reservoir Marina in the second decade in Alternative D (ref. EIS Appendix C, pages C-24 to C-28).

Other changes are made as a result of public comments and internal concerns from the Draft EIS. Those listed above are the ones affecting this appendix. For a more extensive list of the changes made as a result of comments on the Draft EIS, see Chapter 2, page 2-2 and Appendix C of the Final EIS.

B. Common Constraints

Prior to the development of alternatives, the ID Team identified the legal requirements, policy direction, and other considerations which had to be met to ensure that each benchmark and plan alternative would be feasible to implement. A set of constraints were placed on the FORPLAN model in every run to assure these requirements were met. This set of constraints did not vary throughout the analysis. Therefore, the opportunity costs or other trade-offs associated with meeting these constraints were not analyzed. The list can be broken into two types of constraints: (1) common constraints and (2) structural constraints.

Common constraints are those constraints needed to ensure that legal requirements, national and regional policy, and minimum management requirements are met. Examples include constraints to:

- Ensure a non-declining and long-term sustained yield of timber [36 CFR 219.16.(a)(1)].
- Ensure that the Allegheny National Forest has sufficient timber inventory at the end of the planning horizon to provide a perpetual harvest at the long-term sustained yield [36 CFR 219.16 (a)(2)(iv)].
- Any minimum management requirements of 36 CFR 219.27 not covered in the prescription development phase.

Structural constraints are constraints to ensure the results of the FORPLAN runs can be implemented from a technical standpoint.

Table B-28 shows the common and structural constraints developed to respond to these requirements. The table displays the constraint, the constraint kind, constraint amount, applicable time periods, and the rationale for the constraint.

The structural constraint to limit final harvest on analysis areas older than 90 years was used because of inventory errors and potential regeneration problems on the sites. We now know that many of these areas are actually much younger than TMIS data indicates and have significantly less volume than the yield tables show.

These areas also have been undesirable to regenerate in the past due to hemlock understory, wet site, or steep and rocky inclusions. If these areas are managed for timber outputs, the investments needed to overcome the regeneration problems should be spread over several decades.

Recent efforts to regenerate oak stands to the oak type have not been completely successful. Many oak stands have converted to Allegheny hardwood types despite objectives to retain the oak type. Thus, we have included a structural constraint which precludes regeneration harvests in decade 1 for prescriptions with the objective of retaining the oak type. We anticipate research results will be available by the second decade to allow retention of the oak type. Prescriptions which convert oak analysis areas to the Allegheny hardwood type do allow regeneration harvests in the first decade.

The structural constraint on aspen final harvest applies only to prescriptions 1/1.11. An even mix of aspen age classes (10, 20, 30, 40-year old) is required to provide the specified grouse habitat and, therefore, the WFUD coefficients included in FORPLAN for these prescriptions. For this reason, the constraint requires final harvest of 25 percent of the 1/1.11 aspen acreage each decade. Most of the aspen on the ANF is now 50-years old. In order to provide for a more rapid rejuvenation of these older stands, we have required final harvest on 50 percent of the 1/1.11 aspen acreage in decade 1.

With the exception of Benchmark 4, which used high instead of low OGM demand, the above common and structural constraints were applied to all benchmarks and alternatives.

TABLE B-28 COMMON AND STRUCTURAL CONSTRAINTS FOR ALL ALTERNATIVES

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Common Constraints				
Non-declining yield	Minimum	Greater than or equal to previous decade	1-15	The planned sale for any future decade shall be equal to or greater than the planned sale for the preceding decade. This ensures a non-declining supply of timber volume throughout the planning horizon as required in the National Forest Management Act (NFMA) regulations 36 CFR 219.16(a)(1).
Long-term sustained yield	Maximum	Less than or equal to LTSY	15	The planned sale is not greater than LTSY. This ensures the planned sale can be maintained. NFMA regulation 36 CFR 219.16(a)(1).
Perpetual timber harvest	Minimum	Greater than or equal to LTSY	15	Forest inventory at the end of the planning horizon should be great enough to sustain future harvest at LTSY. NFMA regulation 36 CFR 219.16(a)(2)(iv).
Rotations based on 95% of culmination of mean annual increment	Minimum	Greater than or equal to 95% CMAI	1-15	Allow harvest options to begin at 95% of the culmination of the mean annual increment. Ensure a minimum tree size before final harvest. NFMA regulation 36 CFR 219.16(a)(2)(iii) and the Forest Service Manual (FSM) 2413.21 apply.
Low demand scenario for oil gas, and minerals development (acres)	Equality	65,500	1-15	Require 65,500 acres, distributed over all analysis areas, to be allocated to high intensity oil, gas, and minerals management goals. Since development of private subsurface rights are not controlled by Forest Service, a projection or estimate was developed that will apply to all alternatives. It will show the effects and opportunities of oil and gas development on surface resource development. See Section IV.B.2.

TABLE B-28 (CON'T) COMMON AND STRUCTURAL CONSTRAINTS FOR ALL ALTERNATIVES

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Special Areas (acres)	Equality	5,903	1-15	Assign Tionesta Research Area, Tionesta Scenic Area, Hearts Content, and Kane Experimental Forest to Management Prescription 9.1. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as Management Prescription 8.1.
Structural Constraints				
Limit final harvest on AA's older than 90 years	Maximum (acres)	33%	1-2	Maximum of 33% of 90+ age classes in each timber type (AH, NH, and Oak) can be final harvested in period 1, and 33% in period 2. Existing volumes and regeneration problems not reflected in inventory data. (See narrative for a more complete explanation).
Aspen final harvest	Equality (percent)	50% 25%	1 2-6	Final harvest 50% of all acres allocated 1 in period 1 and 25% in periods 2-6. If management prescription 1 is assigned, an even distribution of age classes is required to generate the WFUD coefficients in the prescription.
Delay final harvest in oak	Maximum (acres)	0	1	Zero acres can be assigned Oak to Oak final harvest prescription in period 1. Current technology is not available to regenerate Oak. (See narrative for a more complete explanation).
Analysis Areas	Equality (acres)	503,306	1-15	Ensure all acres of the Forest are assigned in the model.

C. Development of Alternatives

1. Introduction

The NFMA regulations 36 CFR 219.12(f)(2) require that alternatives be formulated so that opportunity costs (measured by the reduction in Present Net Value between sequential model runs) and resource and environmental trade-offs can be evaluated between plan alternatives and within each alternative. The analysis of trade-offs between alternatives is discussed in Section VIII.C. The procedure for evaluating the opportunity costs and trade-offs within an alternative is through incremental constraint analysis with FORPLAN. The incremental analysis procedures are discussed in this section while the results of the analysis are discussed in Section VIII.D. In incremental analysis, constraints or sets of related constraints are added to the model one at a time. Each time a new constraint or constraint set is added, FORPLAN is run and a new prescription assignment, subject to the additional constraints, is determined. Summarizing the costs, outputs, and effects of the new prescription assignment, and comparing these results to the previous runs (just prior to adding the additional constraints) provides an estimation of the opportunity cost, and resource and environmental trade-offs produced by the new constraints.

Constraints are used to ensure that output amounts, effects, and forest conditions will be produced to achieve the particular purposes, goals, and objectives of a plan alternative. When possible, the constraints which address the same problem statements are grouped into sets. This allows an evaluation of the effects produced by attempting to resolve the problem statements.

The sequence in which constraint sets are added to the model is based on their expected impact on the solution. The sets which are expected to have the most impact are the first to be added.

The constraints used to formulate alternatives are separated into four categories: (1) constraints needed to meet MMR's, (2) constraints needed to meet general timber harvest policy in the NFMA regulations, (3) constraints to ensure technical feasibility, and (4) constraints to achieve multiple-use objectives.

Constraint categories 1 and 2 are generally referred to as common constraints. Category 3 constraints are structural constraints, and category 4 constraints are discretionary constraints. The common and structural constraints were discussed in VII.B. The first 3 categories are always constraint set 1 in the iterative process of alternative development.

The following section discusses the addition of discretionary constraints for each alternative. For each alternative its purpose, relationship to benchmarks, and relationship to problem statements is stated. In the discussion of the relationship of the alternatives to the problem statements is a description of the objectives which require FORPLAN constraints to achieve their desired outcome. Objectives are grouped by problem statements. Objectives addressing the same problem statements will be grouped together as a "problem statement objective set." The discretionary constraints developed as a result of each set of objectives will also be displayed and grouped as a constraint set. The constraint, constraint kind, constraint amount, applicable time period, and constraint rationale will be displayed in tabular form. The objective set and their constraint sets will be displayed in the order in which the constraint sets are placed on the model. The problem statement objective set and the constraint set will be numbered the same, i.e., problem statement objective set 2 is addressed by the constraints in constraint set 2. For each constraint set, PNV, change in PNV, total discounted costs, total discounted benefits, and discounted cost and benefits by decision variables are displayed. A more detailed display of costs, outputs, and effects can be found in Section VIII.C. and D.

2. Discussion of Individual Alternatives

a. Alternative A

1) Purpose

This alternative will emphasize high levels of production of non-market outputs. The alternative will produce a high level of recreation user satisfaction for those desiring large expanses of the Forest in a natural-appearing condition. Substantial opportunities will be provided for semi-primitive recreation.

Market outputs will remain close to current levels, but timber volumes may be lower than current levels in the early decades.

2) Relationships to Benchmarks

Alternative A is derived from the benchmark which maximizes PNV with only non-market outputs valued. Additional constraints are added to maintain a minimum level of timber harvesting.

3) Relationships to Problem Statements

a) Quantities of Timber Volume

Timber volume is allowed to fall twenty percent lower than current levels. Selection management will be used extensively, and long rotations (with final harvest beginning at age 120) will be used on areas managed under the even-aged system.

Current levels of diversity will be maintained. Conversion of oak stands is not allowed. Manage 11,000 acres of aspen intensively for grouse production. No even-aged management is allowed on steep slopes or bottomland AA's.

- Timber Problem Statements - Objective Set #2

  - Timber management will aim at producing high-quality hardwood sawtimber but at a level below current.
  - Total timber volume will be reduced from current levels.

- Timber Problem Statements - Constraint Set #2

  - See Table B-29.

b) Recreation Mix

Large acreages will be assigned semi-primitive ROS prescriptions. The Allegheny Reservoir Face will receive prescription 6.1. For aesthetic purposes, selection management will be used extensively, and long rotations (greater than 120 years) will be used where even-aged management is assigned.

Small-scale, rustic campgrounds will be provided near water attractions and at major trailheads throughout the Forest. No new development will be provided on the Allegheny Reservoir, except for bank fishing trails.

- Recreation/Wildlife Problem Statements - Objective Set #3

  - Provide a setting which affords recreation users an opportunity for solitude and few encounters with motorized vehicles forest-wide. Small-scale facilities will be scattered throughout the Forest to disperse use. Financial efficiency is secondary to providing widely scattered recreation use.
  - Management for fish and wildlife will be intensive for both game/non-game species which favor a mature northern hardwood timber type.
  - Emphasis will be on growing timber to at or near pathological rotation versus economic rotation.

- Recreation/Wildlife Problem Statements - Constraint Set #3

  - See Table B-30.

- Additional Rationale for Alternative A Recreation/Wildlife - Constraint Set #3

  - Allegheny Reservoir Face management: Manage the Reservoir Face to provide a semi-primitive motorized setting with a VQO of Retention. Make high investments for recreation and wildlife, assigning prescription 6.1.
  - Buzzard Swamp management: Continue current intensive riparian/waterfowl management in the core area of Buzzard Swamp in cooperation with the Pennsylvania Game Commission.
  - Wildlife and Fish management: Management for wildlife will be intensive and emphasize both game and non-game species which favor large expanses of mature and old-growth northern hardwoods. Habitat improvement will include permanent grassy openings, openings planted with fruit-producing shrubs, and conifer plantings. Identify, protect, and where necessary, enhance 100 turkey wintering areas. These areas should be more or less uniformly located across the Forest.

We will not emphasize achieving high acreages of final harvest to help maintain a high deer herd.

c) Wilderness/NRA

Provide the amount of Wilderness and NRA acreage as designated in the PA Wilderness Act of 1984.

- Wilderness/NRA Problem Statements - Objective Set #4

  - Provide Wilderness area consistent with legislation. This includes areas known as Hickory Creek and the Allegheny River Islands.
  - Provide NRA consistent with legislation. This includes Allegheny National Recreation Area.

- Wilderness/NRA Problem Statements - Constraint Set #4

  - See Table B-31.

4) Incremental Analysis Table

See Table B-32.

Table B-29 ALTERNATIVE A - Timber Problem Statements - Constraint Set #2

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Sawtimber Volume (MMBF/decade)	Minimum	100	1-15	Hardwood sawtimber will be greater than 100 MMBF per decade. Allow sawtimber to be reduced below current levels. The maximum reduction allowed is 60% of current.
Total Volume (MMBF/decade)	Maximum	411	1-15	Total volume will be equal to or less than 65 MMCF (411 MMBF). This reduces total volume to 20% below current level of 520 MMBF/decade.
No Oak conversion (acres)	Maximum	0	1-15	Zero acres of Oak Analysis Areas will be allocated a conversion prescription. Management direction is: to maintain the oak type for wildlife and vegetative diversity.

Table B-30 ALTERNATIVE A - Recreation/Wildlife Problem Statements - Constraint Set #3

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Allegheny Reservoir Face Management (acres)	Equality	8,695	1-15	Assign all acres of Allegheny Reservoir Face to management prescription 6.1. Provide and maintain semi-primitive motorized opportunity around reservoir. See additional rationale for Alternative A constraint set 3.
Harvesting Restrictions on Steep and Bottomland (acres)	Maximum	0	1-15	Assign 0 acres of steep and bottomland Analysis Areas to management prescriptions 1, 3, 4, and 6.2 To maintain visual quality, soil, and water objectives, do not practice even-aged management on these sites.
Buzzard Swamp Management (acres)	Equality	782	1-15	Assign core area of Buzzard Swamp to 9.1. Continue intensive management in Buzzard Swamp. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as management prescription 6.3. See additional rationale for Alt. A constraint set 3.
Aspen/Grouse Management (acres)	Equality	11,374	1-15	Assign management prescription 1 to 11,374 acres. This includes all existing aspen sites and Dog Trial area. Intensively manage these areas for grouse.
Wildlife and Fish Management (acres)	Equality	503,306	1-15	Constrain all acres of the Forest to receive high Recreation/Wildlife (R/W) intensity. Intensively manage wildlife. See additional rationale for Alternative A constraint set 3.
Harvest Age	Minimum	Greater than or equal to culmination of MAI $	1-15	Limit final harvest to no earlier than culmination of mean annual increment of value per acre. Ensure more larger trees per acre for aesthetic reasons.

Table B-31 ALTERNATIVE A - Wilderness/NRA Problem Statements - Objective Set #4

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Wilderness Areas (M acres)	Equality	10	1-15	Require Hickory Creek and the Allegheny River Islands to be assigned management prescription 5.
NRA (M acres)	Equality	23	1-15	Require Allegheny Front, Complanter, and Tracy Ridge to be assigned management prescription 6.1, high intensity.

Table B-32: INCREMENTAL ANALYSIS OF ALTERNATIVE A (in MM$)
(Only FORPLAN Costs/Outputs Included)

	Net Values		Costs		Benefits		Discounted Cost by Element						Discounted Benefit by Element					
Constraint Set	PNV	Change in PNV	PV	Change in PV	PV	Change in PV	Rec	Wld	Wldlf	Tbr	CGM	Support	Rec	Wld	Wldlf	Tbr	CGM	Support
1 Max PNV benchmark	444	-65	101	-47	539	-110	8	0	17	71	2	3	157	0	22	359	1	1
2 Timber	379	-15	54	3	429	-9	5	1	16	27	2	3	240	1	48	140	1	1
3 Rec/Wldlf	364	-5	57	1	420	-3	6	0	13	34	2	3	248	0	46	125	1	1
4 Wilderness/NRA	359		58		417		6	1	12	34	2	3	241	4	45	126	1	1

b. Alternative B

1) Purpose

This alternative will emphasize continuation of current management direction. Small increases will occur in timber volumes and developed recreation. Thus, slight increases will occur in returns to the treasury and local governments. Areas not needed for timber production will be managed for dispersed recreation and wildlife.

2) Relationships to Benchmarks

Alternative B represents the Current Situation.

3) Relationships to Problem Statements

a) Quantities of Timber Volume

Timber volumes will be constrained to the 1980 RPA targets, and approximatly the same ratio between sawtimber and roundwood will be retained. To meet agreements between the Forest Service and Pennsylvania Game Commission, even-aged final harvest acreages must exceed 20,000 acres per decade.

To maintain diversity, no oak conversions will be allowed. Softwood conversions will not be allowed on the low stocked AA's.

- Timber Problem Statements - Objective Set #2

  - Intensively manage the timber resources to increase the sustained supply of timber products, especially high-quality hardwoods.
  - Emphasize the production of timber crops through applying even-aged management.

- Timber Problem Statements - Constraint Set #2

  See Table B-33.

b) Recreation Mix

A mix of recreation opportunities will be provided. Developed recreation will be emphasized over dispersed,

however, only one new facility will be provided on the Allegheny Reservoir.

Investment levels for recreation/wildlife prescription intensities will be low.

- Wildlife/Recreation Problem Statements - Objective Set #3

  - Dispersed recreation will occur forest-wide. In several natural-appearing areas, dispersed and primitive recreation will be the primary management objective.
  - Emphasize wildlife management for game species with minimal investments to provide public big-game hunting opportunities.

- Recreation/Wildlife Problem Statements - Constraint Set #3

  See Table B-34.

c) Wilderness/NRA

Provide the amount of Wilderness and NRA acreage as designated in the PA. Wilderness Act of 1984.

- Wilderness/NRA Problem Statements - Objective Set #4

  - Provide Wilderness Area consistent with legislation. This includes areas known as Hickory Creek and the Allegheny River Islands.
  - Provide NRA consistent with legislation. This includes Allegheny National Recreation Area.

- Wilderness/NRA Problem Statements - Constraint Set #4

  See Table B-35.

d) Public Review of Draft EIS

No herbicide use for 15 decades.

- Public review of Draft EIS - Objective Set #5

  - Based on public review of the Draft EIS, Alternative B was changed to reflect no herbicide use for 15 decades.

Alternative B was chosen since it models the current situation and herbicides are not used as a standard regeneration activity on the Forest.

- Public review of Draft EIS - Constraint Set #5

  See Table B-36.

4) Incremental Analysis Table

   See Table B-37.

Table B-33 ALTERNATIVE B - Timber Problem Statements - Objective Set #2

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Hardwood Sawtimber (percent of total volume)	Minimum	45%	1-15	Constrain hardwood sawtimber to comprise at least 45% of total sale volume. Historically the percent of hardwood sawtimber as a percent of total volume is approximately 50 percent.
Meet RPA Targets for Timber Sale (MMBF)	Minimum	60+ 10%	1	RPA targets are the best estimates of the Forest's current timber sale objectives.
		61+ 10%	2	
	Maximum	61+ 10%	3	
		62+ 10%	4	
		63+ 10%	5	
Final Harvest Acres (acres)	Minimum	20,000	1-15	Maintain final harvest acreage from agreement with Pennsylvania Game Commission.
No oak Conversion (acres)	Maximum	0	1-15	Zero acres of oak assigned to a conversion prescription. Current direction is to maintain the oak type for wildlife and vegetative diversity.
No Conifer Management on Low-stocked Areas (acres)	Maximum	0	1-15	Assign 0 acres to management prescription 4.0 on low-stocked analysis areas. The Forest currently does not plant conifers, except for wildlife cover.

Table B-34: ALTERNATIVE B - Recreation/Wildlife Problem Statements - Objective Set #3

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Recreation and Wildlife Intensity (acres)	Maximum	0	1-15	Assign 0 acres to medium and high recreation and wildlife intensities. We have defined the low intensity as the current situation.
Allegheny Reservoir Face Management (acres)	Equality	8,965	1-15	Assign management prescription 9.1 to the Allegheny Reservoir Face. Maintain visual quality objectives and recreation potential in the Reservoir Area. No new facilities would be developed. Existing facilities around reservoir would continue as currently managed.
Buzzard Swamp Management	Equality	782	1-15	Assign the core area of Buzzard Swamp to management prescription 9.1. Continue intensive management in Buzzard Swamp. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as management prescription 6.3. Continue current intensities riparian/waterfowl management in cooperation with the Pennsylvania Game Commission.

Table B-35 ALTERNATIVE B - Wilderness/NRA Problem Statements - Constraint Set #4

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Wilderness Areas (M acres)	Equality	10	1-15	Require Hickory Creek and the Allegheny River Islands to be assigned management prescription 5.
NRA (M acres)	Equality	23	1-15	Require Allegheny Front, Complanter, and Tracy Ridge to be assigned management prescription 6.1, medium intensity.

Table B-36 ALTERNATIVE B - Public Review of Draft EIS - Constraint Set #5

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
No ground application of herbicide	Maximum	0	1-15	Based on public comment of the Draft EIS Alternative B was no herbicide, modified to use

Table B-37 INCREMENTAL ANALYSIS OF ALTERNATIVE B (in MM$)
(Only FORPLAN Costs/Outputs Included)

	Net Values		Costs		Benefits		Discounted Cost by Element						Discounted Benefit by Element					
Constraint Set	PNV	Change in PNV	PV	Change in PV	PV	Change in PV	Rec	Wld	Wldlf	Tmb	OGM	Support	Rec	Wld	Wldlf	Tmr	OGM	Support
1 Max PNV benchmark	444	-44	101	-33	539	-75	8	0	17	71	2	3	157	0	22	359	1	1
2 Timber	400	-76	68	-18	464	-92	6	0	18	29	2	3	289	0	40	213	1	1
3 Rec/Wldlf	324	-8	50	-4	372	-10	3	0	1	40	2	4	134	0	22	215	1	1
4 Wilderness/NRA	316	-20	46	-3	362	-23	3	1	1	36	2	3	139	4	25	192	1	1
5 Public Review (No Herbicide)	296		43		339		3	1	1	33	2	3	137	4	24	172	1	1

c. Alternative C

1) Purpose

This alternative will emphasize high levels of production of outputs with market-established prices. Significant increases will occur in sawtimber volumes and receipt-producing recreation, which will produce high levels of revenue for the U.S. Treasury and local governments. The private sector will develop most new recreation development.

2) Relationships to Benchmarks

Alternative C is derived from the Max PNV Market Benchmark. In addition to the benchmark constraints, non-declining sawtimber volumes are required.

3) Relationship to Problem Statements

a) Quantities of Timber Volume

Quantities of timber volume will increase substantially from current levels. To maintain stable volume and receipts, provide a non-declining, even flow of sawtimber and total volume. Even-aged management is used almost exclusively.

In the FORPLAN formulation, allow oak conversions on all sites and allow reforestation prescriptions on all low stocked AA's.

- Timber Problem Statements - Objective Set #2

  Intensively manage timber crops for the highest value hardwood sawtimber species yielding the highest discounted returns to the treasury.

- Timber Problem Statements -- Constraint Set #2

  See Table B-38.

b) Recreation Mix

Nearly all of the ANF will be managed in the roaded-natural ROS class. Timber management prescriptions will generally not be assigned to the "seen-area" around the Allegheny Reservoir.

Expansion of existing facilities and new campgrounds will be provided on the Allegheny Reservoir. Two resorts will be provided by private capital.

High investment prescription intensities will not be allowed for recreation/wildlife. Exceptions will be allowed surrounding developed recreation areas. If a hunting/fishing stamp is passed, revenues will be used to develop wildlife/fish habitat.

Three campgrounds will be constructed in the river corridors. One each in the Allegheny, Clarion, and Tionesta corridors.

- Recreation/Wildlife Problem Statements - Objective Set #3

  - Provide new dispersed and more primitive recreation opportunities only in small areas surrounding the major recreation facilities.
  - Enhance big-game hunting opportunities through timber management activities only. (No C element wildlife habitat improvement unless volunteer groups do the work).

- Recreation/Wildlife Problem Statements - Constraint Set #2

  See Table B-39.

- Additional Rationale for Alternative C Recreation/ Wildlife Constraint Set #3

  Recreation and Wildlife Intensities: Recreation management will be concentrated around the Allegheny Reservoir and the major rivers and streams.

  Allocating 0 acres to medium and high recreation/wildlife intensities means a low emphasis on dispersed recreation forest-wide. Access facilities for dispersed activities will only be provided to enhance use of developed sites.

  Provide small, natural-appearing areas for dispersed activities around developed facilities. These areas would provide activities such as day-hiking, bridle trails,

cross-country skiing, interpretive trails, ORV trails, downhill ski areas, etc.

Provide only the increase in hunting opportunity which results from the vegetative manipulation associated with timber harvesting. Investment in wildlife habitat improvement projects will be minimal.

Fish and wildlife habitat improvement projects will be accomplished only by volunteer groups.

c) Wilderness/NRA

Provide the amount of Wilderness and NRA acreage as designated in PA Wilderness Act of 1984.

- Wilderness/NRA Problem Statements - Objective Set #4

  - Provide Wilderness Area consistent with legislation. This includes areas known as Hickory Creek and the Allegheny River Islands.
  - Provide NRA consistent with legislation. This includes Allegheny National Recreation Area.

- Wilderness/NRA Problem Statements - Constraint Set #4

  See Table B-40.

4) Incremental Analysis Table

See Table B-41.

Table B-38 ALTERNATIVE C - Timber Problem Statements - Constraint Set #2

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Non-declining Even Flow of Sawtimber	Minimum	Greater than or equal to previous decade	1-15	Offer for sale a non-declining yield of hardwood sawtimber volume. Provide high-quality hardwoods emphasizing production of black cherry through even-aged silvicultural management system.

Table B-39 ALTERNATIVE C - Recreation/Wildlife Problem Statements - Constraint Set #3

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Recreation and Wildlife Intensities (acres)	Maximum	0	1-15	Allocate 0 acres to the medium and high recreation and wildlife intensities. Little emphasis is to be placed on dispersed recreation and wildlife investments in this alternative. See additional rationale in Alternative C constraint set 3.
Buzzard Swamp (acres)	Equality	782	1-15	Assign core area of Buzzard Swamp to management prescription 9.1. Continue intensive management in Buzzard Swamp. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as management prescription 6.3.
Allegheny Reservoir Face Management (acres)	Minimum	6,086	1-15	Manage at least 70% of Allegheny Reservoir Face under a management prescription other than even-aged management. Cannot manage more than 30% even-aged and retain recreation experience levels associated with Alternative C.

Table B-40 ALTERNATIVE C - Wilderness/NRA Problem Statements - Constraint Set #4

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Wilderness Areas (M acres)	Equality	10	1-15	Require Hickory Creek and the Allegheny River Islands to be assigned management prescription 5.
NRA (M acres)	Equality	23	1-15	Require Allegheny Front, Complanter, and Tracy Ridge to be assigned management prescription 6.1, low intensity.

Table B-41 INCREMENTAL ANALYSIS OF ALTERNATIVE C (in MM$)
(Only FORPLAN Costs/Outputs Included)

	Net Values		Costs		Benefits		Discounted Cost by Element						Discounted Benefit by Element					
Constraint Set	PNV	Change in PNV	PNV	Change in PNV	PNV	Change in PNV	Rec	Wld	Wldlf	Tbr	OGM	Support	Rec	Wld	Wldlf	Tbr	OGM	Support
1 Max PNV benchmark	444	-26	101	-14	539	-38	8	0	17	71	2	3	157	0	22	359	1	1
2 Timber	418	-65	87	-18	501	-81	7	0	19	57	2	3	166	0	28	306	1	1
3 Rec/Wldlf	353	-16	69	-1	420	-15	4	0	0	60	2	4	95	0	5	318	1	1
4 Wilderness/NRA	337		68		405		4	1	0	58	2	3	99	4	9	291	1	1

d. Alternative D

1) Purpose

This alternative will emphasize significant increases in both market and non-market outputs. Substantial increases are planned for timber and revenue-producing recreation which will result in increasing revenues for local governments and the U.S. Treasury. Several large areas of semi-primitive recreation will be provided.

2) Relationship to Benchmarks

Alternative D is based upon the Max PNV Market - Non-Market benchmark. It differs from that benchmark in two fundamentally different ways: (1) Non-declining yields (NDY) of sawtimber are required and (2) several large areas of semi-primitive recreation are required.

3) Relationship to Problem Statements

a) Quantities of Timber Volume

Quantities of timber volume must be greater than the current situation.

To maintain stability of the local timber industry and revenues to local government, provide a non-declining flow of hardwood sawtimber and total volume. Rotation ages will be selected by FORPLAN to meet the NDY constraints.

To maintain diversity, retain low-site oak in the oak type and do not allow timber management prescriptions on the low-stocked areas.

- Timber Problem Statements - Objective Set #2

  - Total harvest of quality hardwood sawtimber volume is greater than at present.
  - Practice no timber management on at least the 15% of the Forest which is to provide developed and dispersed recreation opportunities.
  - Intensively manage the timber resource outside of the natural-appearing areas to produce high-quality, high value hardwood sawtimber in the most efficient manner.

- Provide for a sawtimber harvest which capitalizes on current age class distribution.
- Due to large deer herd and resulting reforestation problems expected in periods 1 and 2, increase final harvest acres in these periods. Also, implement a modest increase of final harvesting in the first decade to begin to spread out age class distribution.

- Timber Problem Statements - Constraint Set #2

  See Table B-42.

- Additional Rationale for Alternative D Timber - Constraint Set #2

  - Require a Minimum of 420 MMBF of Sawtimber in Periods 1 thru 5: The Management Team decided to increase the harvest levels above levels shown in constraint set #1. By increasing allowable harvests in periods 1 thru 5, the Forest can capitalize on the age class distribution that now exists on the Forest.

  - Final Harvest 30,000 acres in Periods 1 and 2

    Removing the non-declining even flow sawtimber constraint will result in significantly fewer acres (less than 30,000) of final harvest cutting. The large acreage shown after imposing constraint set #1 is not feasible to implement. The Management Team desires to begin final harvesting a significant acreage now to prevent the majority of them from reaching pathological maturity all at one time. Thirty thousand acres is the most we feel we can successfully regenerate in the short run until we have resolved the deer impacts and overcome the fern/striped maple regeneration problems.

  - Conversion prescriptions: Emphasize increasing the timber age class diversity for wildlife but allow a reduction in vegetative diversity. Retain low site oak in the oak type and low-stocking.

b) Recreation Mix

Manage at least 15 percent of the ANF in a semi-primitive ROS prescription.

Emphasize developed facilities only on the east side of the Allegheny Reservoir. Expand and develop new campgrounds only on the east side of the Allegheny Reservoir.

Take advantage of water attraction and provide access and campground facilities in Allegheny, Clarion, and Tionesta River Corridors.

Medium investment level intensities will be provided for recreation and wildlife.

- Recreation/Wildlife Problem Statements - Objective Set #3

- Provide opportunities for recreational experiences in highly developed sites near major water features in settings that are easily accessible yet natural-appearing.
- Manage at least 15 percent of the Forest as large, natural-appearing areas where the major emphasis is to provide a semi-primitive recreation experience.
- Emphasize providing an increased amount of hunting opportunity for deer and turkey within areas managed to provide timber outputs.
- Assign the large semi-primitive areas to those locations on the Forest best suited for this use.

- Recreation/Wildlife Problem Statements - Constraint Set #3

  - See Table B-43.

- Additional Rationale for Alternative D Recreation/Wildlife Constraint Set

  - Allegheny Reservoir Area: Establish an area surrounding the Reservoir which would include the following: (25,281 acres)

- Tracy Ridge (9,141 acres)
- Cornplanter (3,074 acres)
- The Reservoir Face which includes the visual corridor, but not to exceed 1/2 mile from the shoreline

  All of the land within the Proclamation Boundary on the west side of the Reservoir, including land greater than 1/2 mile from the shoreline

- Emphasize developed recreation management on the east bank, maintaining the west bank in an undeveloped condition. Assign the high recreation and wildlife management intensity for management prescription 6.1 to the entire Allegheny Reservoir Management Area.

  Provide large natural-appearing areas (primarily in ROS classes of semi-primitive) for dispersed recreation: Manage 15 percent of the Forest to provide a semi-primitive recreation experience, including some designated Wilderness. Assign the following large areas to management prescriptions with a semi-primitive ROS class (5, 1, 9.1).

  - One large, contiguous area containing 28,678 acres whose boundary includes the Hickory Creek (8,936 acres), Allegheny Front (7,505 acres), and Minister Valley (1,967 acres) RARE II areas. The boundary would also border State Game Lands Number 29.
  - Another area known as the Clarion River RARE II area (4,291 acres).

- Constrain Major River Corridors to Management Prescription 6.1

  These areas receive high dispersed recreation use and are sensitive travelways. Since we have a substantial acreage assigned to prescriptions calling for no timber harvesting, it would be more appropriate to assign it to the most sensitive recreation corridors on the Forest.

- Wildlife Management Intensity: Emphasize a high intensity of wildlife habitat improvement on areas assigned timber management prescriptions by requiring at least 150,000 acres of the high recreation and wildlife intensity. Assign high intensity, non-game, wildlife habitat improvement to the 30,000 acres which include or immediately surround the developed recreation sites and the large, dispersed use, recreation areas.

- Aspen/Grouse Management: Maintain the current aspen acreage, but not necessarily on the present sites. Manage this acreage intensively for grouse production.
- Buzzard Swamp Management: Continue with current level of intensive management for waterfowl and riparian wildlife species within the Buzzard Swamp core area in cooperation with the Pennsylvania Game Commission.

c) Wilderness/NRA

Provide the amount of Wilderness and NRA acreage as designated in the PA. Wilderness Act of 1984.

- Wilderness/NRA Problem Statements - Objective Set #4

  - Provide Wilderness Area consistent with legislation. This includes the area known as Hickory Creek and the Allegheny River Islands.

  - Provide NRA consistent with legislation. This includes Allegheny National Recreation Area.

- Wilderness/NRA Problem Statements - Constraint Set #4

  - See Table B-44.

d) Constraint Set #5[1]

This constraint set was added to enhance the spatial arrangement of the solution.

- Constraint #5 - Objective Set #5

  - Based on preliminary mapping and spatial feasibility testing, constrain prescription assignments to improve the spatial arrangement of prescriptions.

- Constraint Set #5 - Constraint Set #5

  See Table B-45.

- Additional Rationale for Alternative D - Constraint Set #5

  - Constrain Management Prescription Allocations

    We made these shifts using district input to enhance the spatial arrangement of the solution. To provide some modeling flexibility, we permitted FORPLAN to vary this acreage assignment by +/- 10%.

    We wanted to maintain the integrity of the remaining FORPLAN prescription assignment acreages, but allow flexibility for minor changes.

e) Public Review of Draft EIS

This constraint set was added after public review of the Draft EIS.

1 This constraint set was added after the selection of the preferred alternative in the Draft EIS. It was decided not to remove it after public review. To do so would have masked the effects public review had on revising Alternative D from the Draft to the Final EIS. Therefore, constraint set 5 was retained and constraint set 6 was added to reflect public comments.

- Public Review - Objective Set #6

  - Based on public review of the Draft EIS, several constraints were added to the model. This constraint set identifies those constraints.

  Public Review - Constraint Set #6

  See Table B-46

  Additional Rationale for Alternative D - Constraint Set #6

  - Constrain Management Prescription Allocation

    Many respondents felt there should be more even-aged management and less acres devoted to semi-primitive recreation, while others felt there should be more emphasis on semi-primitive recreation areas. The sportsmen felt there should be some acreage assigned to management prescription 1. As a result, seven thousand acres of management prescription 1 were added, removing it from management prescription 6.1. To increase both semi-primitive non-motorized recreation and even-aged management, management prescription 6.2 was increased by fifteen thousand acres and management prescription 6.1 reduced by a similar amount.

4) Incremental Analysis Table

   See Table B-47.

Table B-42 ALTERNATIVE D - Timber Problem Statements - Constraint Set #2

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Require a minimum of 420 MMBF of sawtimber in periods 1-5	Minimum	420 MMBF	1-5	Increase harvest of sawtimber volume in periods 1-5. See additional rationale for Alternative D Constraint set #2.
Final harvest 30,000 acres in periods 1 and 2	Minimum	30,000 ac.	1-2	Increase final harvest until deer population declines. See additional rationale for Alternative D Constraint Set #5.
Conversion Prescriptions (acres)	Maximum	0	1-15	Zero acres of low site oak assigned to conversion prescriptions. Zero acres of low-stocked analysis areas assigned timber management prescriptions. Maintain existing amount of oak and aspen land/ savannahs for vegetative and wildlife habitat diversity.

Table B-43 ALTERNATIVE D - Recreation/Wildlife Problem Statements - Constraint Set #3

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Allegheny Reservoir Management Area (acres)	Equality	25,281	1-15	Assign management prescription 6.1 high intensity R/W to 25,281 acres including Tracy Ridge and Complanter. Establish an Allegheny Reservoir recreation management area. See additional rationale for Alternative D constraint set 3.
Provide large Natural-Appearing Areas for Dispersed Recreation (acres)	Equality	57,288	1-15	Assign management prescription 5, 6.1, or 9.1 to 57,288 acres which is made up of Hickory Creek, Allegheny Front, Minister Valley, and adjoining area; Clarion River. See additional rationale for Alternative D Constraint set #3.
Constrain major river corridors to management prescription 6.1	Minimum	20,000	1-15	These areas are best suited to be managed with emphasis on dispersed recreation. See additional rationale for Alternative D Constraint Set #2.
Wildlife Management Intensity (acres)	Maximum	0	1-15	Constrain low and high R/W intensities to 0 acres for all timber management prescriptions. Emphasize deer and turkey on areas assigned a timber management goal. See additional rationale for Alternative D constraint set 3.
Buzzard Swamp Management (acres)	Equality	782	1-15	Assign core area of Buzzard Swamp to 9.1. Continue intensive management in Buzzard Swamp. Add additional costs and outputs to 9.1 FORPLAN data. Manage area as management prescription 6.3. See additional rationale for Alternative D constraint set 3.

Table B-44 ALTERNATIVE D - Wilderness/NRA Problem Statements - Constraint Set #4

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Wilderness Areas (M acres)	Equality	10	1-15	Require Hickory Creek and the Allegheny River Islands to be assigned management prescription 5.
NRA (M acres)	Equality	23	1-15	Require Allegheny Front, Complanter and Tracy Ridge to be assigned management prescription 6.1, high intensity.

Table B-45 Alternative D - Constraint Set #5

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Constrain Management Prescription Allocation				
Management Prescription 1.1	Maximum	0	1-15	Increase the acreas allocated to management prescription 3. Reduce acres allocated to management prescription 6.1. See additional rationale for Alternative D Constraint Set #5.
Management Prescription 2.2	Minimum	6,000	1-15	
	Maximum	8,000	1-15	
Management Prescription 3.4	Minimum	280,000	1-15	
	Maximum	342,000	1-15	
Management Prescription 4.0	Maximum	0	1-15	
Management Prescription 5.5	Minimum	8,000	1-15	
	Maximum	10,000	1-15	
Management Prescription 6.2	Minimum	5,000	1-15	
	Maximum	7,000	1-15	
Management Prescription 6.1	Minimum	146,000	1-15	
	Maximum	178,000	1-15	
Management Prescription 6.5	Maximum	0	1-15	
Management Prescription 9.1	Minimum	8,000	1-15	
	Maximum	10,000	1-15	

Table B-46 Alternative D - Public Review of DEIS - Constraint Set #6

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT (acres)	APPLICABLE TIME PERIOD	RATIONALE
Constrain Management Prescription Allocation				
Management Prescription 1	Minimum	6,500	1-15	See additional rationale for alternative 1)
	Maximum	7,500		constraint set #5.
Management Prescription 2	Minimum	5,500	1-15	
	Maximum	6,500	1-15	
Management Prescription 3	Minimum	326,500	1-15	
	Maximum	327,500	1-15	
Management Prescription 4	Maximum	0	1-15	
Management Prescription 6.2	Minimum	19,500	1-15	
	Maximum	20,500	1-15	
Management Prescription 6.1	Minimum	123,500	1-15	
	Maximum	124,500	1-15	
Management Prescription 6.5	Maximum	0	1-15	
Final Harvest a maximum of 30,000 acres in decade 1 and 2.	Maximum	30,000 (acres)	1-2	
Reduce hardwood sawtimber volume	Minimum	347,000 (MBF)	1	Because there will be no oak conversion, sawtimber volume in decade 1 is reduced
Provide for old growth in management prescription 3 and 6.2	Minimum	15,000 (acres)	5-15	Provide for old growth requirements in the standard and guidelines
Harvest oak to oak	Maximum	3,000 (acres)	1	It is possible to regenerated oak to oak on 3,000 acres of the oak timber type
No oak conversion	Maximum	0 (acres)	1-15	Maintain vegetative diversity

Table B-47 INCREMENTAL ANALYSIS OF ALTERNATIVE D (in M M$)
(Only FORPLAN Costs/Outputs Included)

Constraint Set	Net Values: PNV	Change in PNV	Costs: PV	Change in PV	Benefits: PV	Change in PV	Discounted Cost by Element: Rec	Wld	Wldlf	Tbr	CGM	Support	Discounted Benefit by Element: Rec	Wld	Wldlf	Tbr	CGM	Support
1 Max PNV benchmark	444	-2	101	-1	539	-3	8	0	17	71	2	3	157	0	22	359	1	1
2 Timber	442	-36	100	-26	536	-58	7	0	20	68	2	3	150	0	24	360	1	1
3 Rec/Wldlf	406	-5	74	-1	478	-5	6	0	9	54	2	3	153	0	22	301	1	1
4 Wilderness	401	-3	73	-3	473	-5	5	1	9	53	2	3	149	4	22	296	1	1
5 Const Set #5	398	-14	70	8	468	-6	5	1	10	49	2	3	164	4	27	271	1	1
6 Public Review	384		78		462		5	1	10	57	2	3	156	4	26	274	1	1

e. Alternative E

1) Purpose

This alternative emphasizes significant increases in the production of both market and non-market outputs. Substantial increases in timber production will occur but with a special emphasis on visual quality. Significant acreage will be provided for semi-primitive recreation opportunities, and additional developed facilities will be provided.

2) Relationship to Benchmarks

Alternative E is based upon the Max PNV Market-Non-Market benchmark, but many enhancements were made to address problem statements, particularly recreation and wilderness. Alternative E represents the RPA benchmark.

3) Relationship to Problem Statements

a) Quantities of Timber Volume

Provide more timber volume than the current situation. Provide non-declining yields of total timber volume but allow sawtimber volumes to fluctuate. Both even and uneven-aged management will be widely used, and long rotations (greater than 120 years) will be used on areas under even-aged management.

To manage for timber production on the best AA's, do not allow even-aged timber management on low site oak or northern hardwood AA's. Practice intensive management on areas under even-aged management.

For wildlife purposes, manage aspen intensively for grouse production on at least 9,500 acres.

- Timber Problem Statements - Objective Set #2

  - Provide a more natural-looking recreation setting by managing at least 25% of the Forest assigning prescriptions which use either uneven-aged management or no large-scale timber harvesting.
  - Practice intensive even-aged timber management on the best sites and use longer rotations to produce high-quality, large diameter sawtimber.

  - Maintain at least the current level of sawtimber harvest volume.

- Timber Problem Statements - Constraint Set #2

  See Table B-48.

- Additional Rationale for Alternative E Timber Constraint Set

  - Prescription and Timber Management Intensity Restrictions: Manage intensively for high-quality sawtimber on the most productive sites (medium and well-stocked high CAP and high site oak analysis areas) emphasizing even-aged management. To reduce the amount of clearcutting, manage the poorer sites (low CAP and low site oak analysis areas) by applying prescriptions calling for either uneven-aged management (2 & 6.5) or no timber harvesting (5,

6.1, & 9.1). When using the even-aged silvicultural system, manage intensively, making intermediate cuts as soon as there is operable volume. Emphasize the double rotation concept where possible. (See Allegheny Hardwood Silvicultural Guidelines. In summary, the method requires removing intolerants at an earlier age than tolerants. Enough intolerants are left in the stand to ensure successful regeneration to high percentages of intolerants.)

- Timber Type Conversions: Allow a reduction in vegetative type and wildlife habitat diversity from the current situation. Retain low site oak in the oak type, but allow high site oak to convert to Allegheny Hardwoods. Make the following kinds of timber type conversions if applying them will maximize present net value, subject to all other management direction: 1) convert low-stocked analysis areas to conifers and 2) convert high site oak to Allegheny Hardwoods. In order to retain oak types, do not convert any low site oak to conifers and do not plant any Allegheny Hardwoods on low-stocked analysis areas.
- Hardwood Sawtimber Volume for Sale: Forest strives to increase the sale of high-quality timber products to the long-term sustained yield of the timber resource, within the limits established by the management direction for the other resouce areas. Begin by harvesting at least the current sawtimber volume in decade 1 (25 MMBF/year).
- No requirement for non-declining yield of sawtimber volume.

b) Recreation Mix

Roaded-natural will be the predominant ROS class, but special emphasis will be placed on visual quality. Long rotations (greater than 120 years) will be used on all areas under even-aged management. Selection management will be used extensively. No even-aged prescriptions will be assigned to the Allegheny Reservoir area.

Many new campgrounds and access areas will be provided near the water attractions of the Allegheny Reservoir, Allegheny River, Clarion River, and Tionesta Creek. A

scenic highway will be constructed along the west side of the Allegheny Reservoir and will access a proposed resort facility at Hodge Run.

Allow high wildlife and recreation prescription intensities on at least 180,000 acres.

- Recreation/Wildlife Problem Statements - Objective Set #3

  - Provide opportunities for recreation experiences in highly developed sites near major water features in settings that are easily accessible.
  - Emphasize non-motorized recreation experiences (including wilderness) in several large areas totaling to 7 percent (or 35,000 acres) of the Forest.
  - Emphasize providing an increased amount of hunting opportunity for deer and turkey within areas managed to provide timber outputs, using high investment intensities.
  - Increase the opportunity for recreation users to view non-game species by concentrating habitat improvement in areas with high recreation use.

- Recreation/Wildlife Problem Statements - Constraint Set #3

  See Table B-49.

- Additional Rationale for Alternative E Recreation/Wildlife Constraint Set 3

  Minimum Rotation Age: The primary objective guiding timber management decisions is to harvest timber on a longer rotation, thereby emphasizing large diameter, high-quality sawtimber production. Revenues and financial efficiency (present net value analysis) are secondary objectives.

  To provide more areas with larger trees, use rotation ages which exceed the point where culmination of mean annual increment (CMAI) of dollar value occurs. This is well beyond the point where CMAI of total merchantable cubic volume occurs, as defined in 36 CFR 219.16(a)(2)(iii) and in FSM 2412.54.

- Reservoir Face Management: Manage the Allegheny Reservoir Face to provide a natural setting by excluding all prescriptions which call for even-aged management (1, 3, 4, and 6.1).

- Wildlife Management Intensity: Emphasize providing increased hunting opportunities for deer and turkey through increasing the management intensity on areas assigned timber management prescriptions.

  Use medium intensity prescriptions to accomplish habitat improvements, emphasizing volunteer and user group construction and maintenance whenever possible.

- Buzzard Swamp Management: Continue the current level or intensive management for waterfowl and riparian wildlife species within the Buzzard Swamp core area in cooperation with the Pennsylvania Game Commission.

c) Wilderness/NRA

Provide the amount of Wilderness and NRA acreage as designated in PA Wilderness Act of 1984.

- Wilderness/NRA Problem Statements - Objective Set #4

  - Provide Wilderness Area consistent with legislation. This includes the areas known as Hickory Creek and the Allegheny River Islands.

  - Provide NRA consistent with legislation. This includes Allegheny National Recreation Area.

- Wilderness/NRA Problem Statements - Constraint Set #4

  See Table B-50.

4) Incremental Analysis Table

   See Table B-51.

Table B-48 ALTERNATIVE E - Timber Problem Statements - Constraint Set #2

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Prescription Restrictions (acres)	Maximum (acres)	0	1-15	Constrain low-site oak, and low CAPS - medium and high-stocking analysis areas to 0 acres of management prescriptions 1, 3, 4, and 6.2. Reduce clearcutting to provide a more natural setting. See additional rationale for Alternative E constraint set 2.
Timber Type Conversions (acres)	Maximum (acres)	0	1-15	Constrain low-site oak to 0 acres of management prescription 4 and low-stocked analysis areas to 0 acres of management prescriptions 3 and 6.2. Allow some reduction in vegetative and wildlife habitat diversity. See additional rationale for Alternative E constraint set 2.
Timber Management Intensity Restrictions (acres)	Maximum	0	1-15	Constrain 0 acres to receive final harvest-final harvest intensity of management prescription 3.4. When assigning even-aged silvicultural system, practice intensive timber management. See additional rationale for Alternative E constraint set 2.
Hardwood Sawtimber Volume for Sale (MMBF/decade)	Minimum	250	1	Require 250 MMBF to be sold in period 1. Offer at least the current volume sold of high-quality hardwoods. See additional rationale for Alternative E constraint set 2.

Table B-49: ALTERNATIVE E - Recreation/Wildlife Problem Statements - Constraint Set #3

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Minimum Rotation Age	Minimum	Greater than or equal to culmination of MAI of $	1-15	Do not harvest prior to culmination of mean annual increment of dollar value. Emphasize large diameter high-quality sawtimber. See additional rationale for Alternative E constraint set 3.
Reservoir Face Management (acres)	Equality	8,695	1-15	Assign all acres of Allegheny Reservoir Face to management prescriptions 2, 5, 6.1, 6.5, or 9.1. Allow no even-aged management on Reservoir. See additional rationale for Alternative E constraint set 3.
Minister Valley (acres)	Equality	1,967	1-15	Assign all acres of Minister Valley to management prescription 6.1/9.11. Emphasize non-motorized recreation and allow no timber harvest in this area. See additional rationale for Alternative E constraint set 3.
Wildlife Management Intensity (acres)	Minimum	180,000	1-15	Assign a minimum of 150,000 acres of high R/W management intensities in management prescriptions 2, 3, 4, 6.2, and 6.5 and at least another 30,000 acres to any management prescription. Emphasize deer, turkey, and non-game management. See additional rationale for Alternative E constraint set 3.
Aspen/Grouse Management	Minimum	9,664	1-15	Assign 1/1.11 to at least 9,664 acres. Intensively manage at least existing aspen acres for grouse. See additional rationale for Alternative E: constraint set 3.
Buzzard Swamp Management (acres)	Equality	782	1-15	Assign core area of Buzzard Swamp to management prescription 9.1. Continue intensive management in: Buzzard Swamp. Add additional costs and outputs to: 9.1 FORPLAN data. Manage area as management prescription 6.3. See additional rationale for Alternative E constraint set 3.

Table B-50: ALTERNATIVE E - Wilderness/NRA Problem Statements - Constraint Set #4

CONSTRAINT	CONSTRAINT KIND	CONSTRAINT AMOUNT	APPLICABLE TIME PERIOD	RATIONALE
Wilderness Area (M acres)	Equality	10	1-15	Require Hickory Creek and the Allegheny River Islands to be assigned management prescription 5.
NRA (M acres)	Equality	20	1-15	Require Allegheny Front, Complanter, and Tracy Ridge to be assigned management prescription 6.1, high intensity.

Table B-51: INCREMENTAL ANALYSIS OF ALTERNATIVE E (in MM$)
(Only FORPLAN Costs/Outputs Included)

	Net Values		Costs		Benefits		Discounted Cost by Element						Discounted Benefit by Element					
Constraint Set	PNV	Change in PNV	PV	Change in PV	PV	Change in PV	Rec	Wld	Wldlf	Tbr	OGM	Support	Rec	Wld	Wldlf	Tbr	OGM	Support
1 Max PNV benchmark	444	-15	101	2	539	-11	8	0	17	71	2	3	157	0	22	359	1	1
2 Timber 2	429	-50	103	-14	528	-59	8	0	15	75	2	3	169	0	23	335	1	1
3 Rec/Wldlf	379	-6	89	-2	469	-7	8	1	12	64	2	3	202	1	27	238	1	1
4 Wilderness/NRA	373		87		462		8	1	11	62	2	3	200	4	29	227	1	1

VIII. ESTIMATING EFFECTS OF BENCHMARKS, DISCRETIONARY CONSTRAINTS, AND ALTERNATIVES

A. Introduction

The purpose of identifying, estimating, and displaying the effects of each benchmark, discretionary constraint, and alternative is to understand the relationship between achieving certain output levels, allocations, or schedules and the trade-offs that occur in terms of PNV, discounted costs, and discounted benefits.

B. Process for Testing Constraints

In linear programming analysis, constraints override the objective function. Thus, if a predetermined level of outputs or minimum physical condition is entered as a constraint, it is always achieved or no feasible solution is found. Output levels or other desired effects entered as constraints for an alternative are implicitly assigned to contribute more to public benefits than the sum of their cost of production plus the foregone contribution of public benefits of any output they replace in solution in that alternative. Ensuring that this assumption is reasonable requires carefully documenting such trade-offs and, in the case of major constraints, displaying the effects on PNV and the resource implications.

NFMA regulations 36 CFR 219.12(f)(8) states that each alternative must represent the most cost-efficient combination of management prescriptions that can meet the objectives of the alternative. In order to meet this requirement of cost-efficiency, the objective function used in the development of the alternatives was to maximize present net value. Given that maximizing PNV is the measure of cost-efficiency used in alternative development subject to any constraints imposed, the allocation of prescriptions in any alternative will represent the most cost-efficient mix of prescriptions and level of activities and outputs.

The NFMA regulations further state in Sections 36 CFR 219.12(f)(3) and 36 CFR 219.12(g)(4) that each alternative be formulated to identify the significant opportunity costs of constraints associated with achieving alternative resource objectives and define the opportunity costs of constraints associated with resource outputs or conditions that are not assigned monetary values but are supplied at specific levels.

An incremental analysis was used to estimate trade-offs and opportunity costs within an alternative. Ideally, each constraint should be added individually in a variety of sequences. However, due to the number of constraints, the computer costs of runs, and the time involved to make such an analysis, adding each constraint separately is not feasible.

Therefore, individual constraints were placed into constraint sets which addressed a problem statement.

These constraint sets were then added in the same sequence for all alternatives. The results were that the opportunity costs and resource trade-offs to resolve each problem statement could be identified for each alternative. The order in which constraint sets are applied could affect the results. In the incremental analysis done on the ANF, the constraint sets were added in the following order and did not vary by alternative. The first constraint set added was the common and structural constraint set, which had the same constraints for all alternatives. The second constraint set added addressed the timber problem statement. The third constraint set added addressed the recreation and wildlife problem statement. The fourth constraint set added addressed the wilderness problem statement.

Non-priced outputs are resource outputs, effects, or conditions that are not assigned monetary values, but in conjunction with priced outputs, make up the total net public benefits of an alternative. Non-priced outputs are outputs for which there is no available transaction evidence and no reasonable basis for estimating market values. Non-priced benefits, as well as some outputs or factors associated with non-priced benefits, are presented in Section VIII.C.(1). The non-priced benefits include on-site outputs or effects such as visual quality objectives, ROS distribution, and eagle nesting sites and distributive effects such as impact on local jobs and income.

Section VIII.C.(1) examines the trade-offs of differences in non-priced benefits among alternatives. For on-site, non-priced benefits or effects, the gains and losses can be considered as substitutes for priced benefits.

The distributive effects or impacts also involve gains or losses among alternatives. These need to be examined on their own merits. They also should be examined in terms of the associated changes in net priced benefits and the on-site, non-priced benefits to assess the desirability of the indicated trade-off. These comparisons are judgmental indicators of net public benefits for each alternative and of the desirability of the changes in distributive benefits and losses, among alternatives.

C. Analysis of Trade-Offs Between Alternatives

1. Define the consequences of each alternative with respect to ICO's, resource outputs, economic effects....

Each forest plan alternative addresses the problem statements in different ways. This section contains a discussion of the trade-offs resulting from these different approaches to problem resolution. The discussions are organized by problem statement. Trade-offs are presented by alternative within the content of the problems. Because of the multi-resource trade-offs within each problem, discussions could be redundant between problems. To avoid duplication, most of the trade-offs regarding timber versus recreation will be discussed only once, in the timber problem statement.

Financial effects and trade-offs will be mentioned in this section, but the focus will be on resource trade-offs. A more detailed discussion of the financial consequences of alternatives is presented in Section VIII.C.2.

More detailed discussions of trade-offs caused by FORPLAN constraints is contained in Section VIII.D. Some of those effects are used to develop the discussions in this section.

Problem Statement: Vegetation Management

How should vegetation be managed to provide the most desirable quantity of high-quality timber products, habitat for a rich diversity of wildlife species, and an attractive setting for recreation activities?

Yields of Hardwood Volume

Total hardwood volume in the first decade varies between Alternative A's 489 MMBF to Alternative C's 1,026 MMBF. Total volume in the fifth decade varies between 489 MMBF in Alternative A to 940 MMBF in Alternative C. See Table B-52.

Table B-52 Hardwood Volume in Decades 1, 2, and 5 for Each Plan Alternative (in MMBF)

	Alternatives												Benchmark		
	A			B			C			D			E			2	
Decade	Saw	Round	SUM	Saw	Round	SUM	Saw	Round	SUM	Saw	Round	SUM	Saw	Round	SUM	Saw	Round	SUM
1	197	292	489	264	359	623	536	490	1026	383	562	945	311	579	890	530	726	1256
2	165	324	489	345	278	623	536	490	1026	462	483	945	280	610	890	717	527	1256
5	330	159	489	407	263	623	536	404	940	653	292	945	663	227	890	930	322	1252

The most significant trade-off with various levels of timber harvest is the character of recreation settings provided. In Alternative A, 306,000 acres are assigned prescriptions with semi-primitive ROS categories, and 197,000 acres in the roaded natural category. This alternative provides the lowest timber volumes and the lowest PNV in the timber element. See Tables 52 and 53.

Table B-53 PNV of Timber and Recreation Elements by Alternative (MM$)

	Alternative					Benchmark
Element	A	B	C	D	E	2
Recreation	265	207	206	234	311	275
Timber	90	139	241	222	161	295

Conversely, Alternative C provides the highest timber volume and the fewest acres in the more highly valued semi-primitive ROS category. It also has the lowest recreation element PNV of any of the alternatives we considered. When comparing recreation element PNV's, two factors confound the analysis: (1) developed recreation costs/outputs are included and (2) different intensities of recreation investment are assigned in each alternative.

Trade-offs between recreation and timber are of a different nature in Alternative E. Acres in timber producing prescriptions are split nearly evenly between prescriptions 3 and 2. Some forest managers and forest users believe that areas managed under uneven-aged management provide higher levels of visual quality than areas managed under even-aged management. Uneven-aged management also provides visual diversity. Neither of these non-priced effects were assigned values in this analysis.

The trade-offs of assigning the relatively high levels of 2 in Alternative E are significant. Total timber volumes are higher than current, but sawtimber volumes are relatively low. (See Table B-52). This occurs because of the high proportions of pulpwood removed in the earlier entries under selection management. Additionally, the PNV of the timber element is relatively low because: (1) the high proportion of pulpwood removed in the early decades, (2) the high transportation costs associated with selection management, and (3) delayed regeneration harvests in prescription 3.

Non-declining Yield

Alternatives A, B, D, and E require non-declining yields (NDY) of total timber volume, while Alternative C requires both NDY of total volume and NDY of hardwood sawtimber volume. No analysis was performed to estimate the effect of non-declining yield of total volume, but the NDY constraint was always binding, thus, it constrained the PNV of each alternative.

The trade-off of the lower volumes and PNV caused by the policy of NDY is stability of the local timber industry. Because of the diversity of the area's economy and the Allegheny National Forest's relatively small contribution to timber supply, the positive effects on forest industry stability are not expected to be great.

Because of the abundance of roundwood in the area, ensuring non-declining yields of sawtimber volume has been suggested as being more important to industry stability than NDY of total volume. Thus, a constraint requiring a NDY of hardwood sawtimber volume was used in Alternatives C and initially in Alternative D (later removed). In Alternative C, the constraint reduced the PNV by seven percent, slightly reduced total harvest volume but increased hardwood sawtimber volume by 13 percent in the first decade when compared to the max PNV benchmark run with MMR's. Since fewer acres were needed for timber production, the constraint caused a 40,000 acre shift from prescription 2 to 6.1. Thus, the constraint caused the addition of 40,000 acres of semi-primitive non-motorized recreation. Finally, acres clearcut doubled in the first decade. The same effects

occurred in Alternative D but precise effects were masked by additional constraints. Because of the effects of NDY of sawtimber, the constraint was later removed for Alternative D.

Rotation Lengths

Objectives for Alternatives A and E include lengthening rotation ages in prescription 3 to produce the aesthetic effect of larger trees. Constraints to produce this effect caused beginning regeneration harvest ages to begin at age 120 rather than age 60-70 in other alternatives.

Quantification of the aesthetic benefits of providing larger trees for viewing is not possible. The primary trade-off of this constraint is the large increase in uneven-aged management. Because of lengthening rotation ages in prescription 3, prescription 2 becomes more financially competitive with 3.

The uneven-aged harvests are also needed early in the planning horizon to maintain NDY while the analysis areas in 3 grow to age 120.

Understory Control

The Forest completed an Environmental Analysis of understory control on May 6, 1982. (Appendix D in the Forest Plan contains excerpts from this document.) Applying herbicide is the most effective technique for controlling understory vegetation. It works on all target species, is least costly, and meets soil, water, health, and safety objectives. In each alternative, timber harvesting prescriptions require chemical treatment on half of every acre assigned a regeneration harvest treatment under even or uneven-aged management. Thus, the amount of acres herbicided varies directly with the acres of regeneration harvests. As a result of public review of the Draft EIS, Alternative B was revised to eliminate herbicide use. This requirement results in only half the forest being available for even or uneven-aged management in Alternative B.

Table B-54 displays the acres of herbicide use for each alternative. For additional explanation of the understory control problem, see the timber problem statement discussion in Appendix A.

Table B-54 Acres of Herbicides Use for Each Alternative

Decade	Alternative (M acres) A	B	C	D	E	Benchmark 2
1	31	0	28	20	48	30
2	29	0	28	18	31	36
5	14	0	19	22	17	34

Alternative B is the only alternative requiring no herbicide use. At first glance, because there is less even-aged management in Alternatives A and E, one might expect those alternatives to require fewer acres of herbicide use. But, herbicides will also be required in uneven-aged management schemes and more acres of prescription 2 are required to obtain timber volumes equal to 3. Thus, Alternatives A and E also require relatively high amounts of herbicide use, with Alternative E requiring the highest of any alternative.

Alternatives with higher levels of herbicide use will have slightly higher risks of accidents involving herbicides with the possibility of water quality problems. The environmental effects section (Chapter 4 of the Final EIS) provides additional discussion on the risks and effects of herbicide use.

In the "Delay Herbicide Use" benchmark run (Run #3), we attempted to demonstrate the effect on PNV and timber yields of waiting 20 years before we begin to apply any herbicide. The 20-year waiting period would allow us time to see if the lower deer browsing pressure we expect results in improved natural regeneration, as some folks expect. A discussion of the results of this run is in Section VI.F.4. The results would apply to the alternatives as well. Briefly, the results are as follows:

- PNV is slightly lower if we do not apply herbicides until Decade 3.
- Over the short run, we can continue to cut relatively high volumes of timber by shifting to more thinnings and fewer final harvests.
- If regeneration does not start to occur naturally at the end of 20 years, we will have to apply much higher amounts of herbicide in Decades 3 to 5 in order to maintain timber harvest levels.

Trade-Offs Between Alternatives

If regeneration does start to come in naturally as deer browsing decreases, we will be able to avoid using any herbicide.

Many people believe (though there is no research which either confirms or refutes this theory) that the decrease in deer browsing pressure will not be significant enough to have any effect on crop tree regeneration. They also feel that thinning or selection cutting actually increases the fern/striped maple understory cover as more light reaches the forest floor. If lower deer browsing pressure does not result in much improved crop tree regeneration, we will have to follow one of the following courses of action:

- drastically reduce harvest volumes after Decade 2,
- apply a substantial amount of herbicide in Decades 3 to 5 on those areas which have heavy fern/striped maple cover,
- develop an alternative method for economically treating fern/striped maple.

At this point, we do not have enough good inventory data on the location and magnitude of the fern/striped maple problem to realistically assess the validity of our assumptions and confidently select one of the conclusions shown above. Collecting this data will be a top priority for forest plan implementation and monitoring. In the interim, it seems most prudent to begin a herbicide application program. If management concerns preclude effective herbicide use and regeneration success does not improve, we will have to either find an alternative treatment technique or else reduce harvest volumes over the long run.

Reforest Sparsely Stocked AA's

None of the alternatives required assigning prescriptions to reforest low stocked analysis areas. Alternative B does not allow prescription 4 to be applied in low stocked AA's, and Alternative D does not allow prescription 3 to be assigned on those AA's.

Table B-55 displays the acres of low stocked AA's which will be returned to timber production by being assigned prescription 4 and 3.

Table B-55 Acres Returned to Timber Production

Alternative	Acres of Low Stocked AA's Assigned to Prescriptions 3 or 4
A	6,000
B	6,000
C	11,000
D	0
E	8,000
Benchmark 2	4,000

These prescriptions were assigned to these AA's to maintain non-declining flow of timber volumes. Thus, reducing the acres assigned these prescriptions would reduce PNV and the level of non-declining timber volume. Trade-offs of making these prescription assignments include:

- possible loss in the non-priced effect of vegetative diversity, since these areas are currently openings,
- possible reduction in the non-priced effect of visual quality, because these areas provide visual diversity, and
- increases in the timber element budget.

Problem Statement: What mix of recreation opportunities and settings should be provided to best satisfy the diverse preferences of recreationists?

Facility Development

The amount, scale, and location of developed facilities vary within each alternative. These strategies were developed outside of the FORPLAN model. Public involvement was used to identify a full spectrum of developed recreation intensities desired. Objectives for Alternative A emphasize providing dispersed recreation opportunities and small-scale campgrounds with rustic facilities that are distributed widely across the forest.

Alternatives C, D, and E emphasize developed recreation opportunities with various amounts of modern facility recreation areas along the Allegheny Reservoir and major river corridors (Allegheny, Clarion, and Tionesta). See Table B-56 for a comparison of developed facilities in each alternative.

Trade-Offs Between Alternatives

In Alternative C, private investment is encouraged for resort type development as well as some campground facilities. Alternatives E and D include private investment but to a lesser extent. See Table B-57 for an estimate of the cost of private investments for each alternative.

Table B-56 Comparison of Developed Recreation Facilities

PROPOSED ACTIVITY	ROS CLASS	ALTERNATIVES A	B	C	D	E
Expand Existing						
Dewdrop	R			X	X	
Webbs Ferry	R			P		P
Willow Bay	R			P	X	X
KPIC	R			X	X	
*Sugar Bay Boat Launch[1]	RN		X			
*Minister Creek	RN	X				X
New Facility Construction						
*Allegheny River Area	RN	X			X	X
*Bear Creek Area	RN	X			X	
*Salmon Creek Area	RN	X				X
*S. Br. Tionesta Area	RN	X				X
*Kinzua Ridge Area	RN	X			X	X
*Blue Jay Area	RN	X				
*Buzzard Swamp Area	RN	X				
*Francis Estate (Clarion River)	RN			X	X	X
*Arroyo (Clarion River)	RN	X				X
*Clark Run (Allegheny River	RN			X	X	
Arroyo Boat Launch (Clarion River)[1]	RN			X	X	
Barnes Boat Launch (Tionesta Creek)[1]	RN	X		X	X	X
Marienville VIS	R					X
Glasner Run (Tionesta Reservoir)	R			P		
Hopkins Farm (Allegheny River)	R			P	P	P
Motel/Restaurant Complex (Allegheny Reservoir)	R			P	P	
New Resort Construction						
Sugar Bay	R			P		
Kiasutha	R			P		
Hodge Run	R					P
Maintain Existing Facilities	-	X	X	X	X	X

*Indicates small-scale facilities. Remainder are considered large-scale.

1 These include only a boat launch with no additional facilities. Three additional boat launches built as part of a larger facility are listed together.

Small-scale facilities - Developed campgrounds or complexes usually consisting of less than 50 family campsites, sewage systems are vaults or tank & field, and roads and parking areas are gravel surfaced. The complex is a development scale 3, and usually a roaded natural (RN) ROS class.

Large-scale facilities - Developed campgrounds or complexes consisting of more than 50 family campsites, sewage treatment plant, hot shower facilities, and paved roads and parking lots. The complex is a development scale 4 or 5, and usually a rural (R) ROS class.

Resort facilities - Privately financed and operated complexes that may include campgrounds, cabins, motel units, restaurants, marina services, conference center, tennis court, ski slopes, golf courses, stables, swimming pools, and other similiar recreation services. It would be a development scale 5 and a rural (R) ROS class.

Table B-57 Private and Other Agency Undiscounted Costs (5 Decades)

Private/Other Agency Activities	Alternatives A	B	C	D	E	Benchmark 2
Rec. Dev. Const. (M$)						
Decade 1	0	0	819	730	730	819
Decade 2	0	0	2,728	2,728	0	2,728
Decade 3	0	0	3,499	0	5,956	3,499
Decade 4	0	0	3,647	0	1,282	3,647
Decade 5	0	0	0	0	244	0
Rec. Site Oper. & Mntce. (M$)						
Decade 1	0	0	1,025	915	915	1,025
Decade 2	0	0	8,870	8,650	1,830	8,870
Decade 3	0	0	21,665	13,640	16,720	21,665
Decade 4	0	0	36,455	13,640	34,815	36,455
Decade 5	0	0	45,270	13,640	38,325	45,270
Fisheries (M$)						
Decade 1	2,968	1,522	230	1,554	1,864	230
Decade 2	2,169	1,437	283	1,484	1,914	283
Decade 3	2,185	1,287	283	1,332	1,920	283
Decade 4	2,255	1,130	283	1,178	1,966	283
Decade 5	2,219	1,040	283	1,064	1,927	283
TOTAL M$ 50 Years	10,896	6,416	125,340	108,861	110,408	125,340

The levels of private investments in Alternatives C, D, and E, have the effect of keeping costs to the agency low.

Trade-Offs Between Alternatives

The major effect of providing these developed facilities is significant increases in "Rural" recreation visitor days. One might expect significant increases in discounted benefits, but due to the fact that rural RVD's have the lowest RPA "willingness to pay value", (about 1/2 that of semi-primitive motorized) the effect on discounted benefits is minimal.

Character of Recreation Settings

The distribution or mix of recreation opportunities can be measured by RVD's and acres by ROS class. Table B-58 shows the distribution of outputs by ROS class, and Table B-59 shows the distribution of acres by ROS class. Alternatives A and B tend toward a more balanced yield of RVD's and acres.

Table B-58 M RVD's by ROS Class (5th Decade)

	A	B	C	D	E	BM 2	BM 9
SPNM	216	248	245	605	239	99	0
SPM	9,794	5,319	2,164	4,163	4,692	1,619	14,714
RN	7,789	7,417	9,509	10,997	16,404	17,619	5,837
R	2,910	2,910	11,095	4,847	9,416	11,095	11,095

Table B-59 M Acres by ROS Class

	A	B	C	D	E	BM 2	BM 9
SPNM	10	11	15	29	10	1	0
SPM	296	210	76	131	139	34	438
RN	197	271	412	343	353	469	66
R	1	1	1	1	1	1	1

To help explain the interactions, the summary for Benchmarks 2 and 9 are shown. In Benchmark 2 where all outputs are valued with no constraint on choice of recreation intensities, FORPLAN assigned most acres to Prescription 3, high recreation intensity. The reason is that total PNV's are highest in the timber prescriptions that also yield roaded natural RVD's. Conversely, where only non-market goods are valued (Benchmark 9) the volume of roaded natural RVD's alone in the timber prescriptions is not competitive with the higher valued SPM RVD's in the 6.1 prescription. Therefore, the land allocation shifts to 6.1.

To emphasize dispersed semi-primitive recreation opportunities, constraints were imposed in Alternatives A, D, and E to yield more acres of prescriptions with SPM and SPNM recreation classes. In alternative D, limiting timber prescriptions (3, 2, 1, and 6.2) to a medium intensity of recreation caused a significant increase in the acres assigned to Prescription 6.1 with a high recreation intensity (6.1 high often has a higher PNV than 3 medium). About 80 percent of the acreage shown, was forced into the allocation to emphasize large, contiguous blocks of SPM, but the rest were selected for having a higher PNV.

In Alternatives A and E, the shift of prescriptions from timber to 6.1 was caused by the longer rotation constraints imposed. Here again, PNV's of the 6.1 prescription with high intensity recreation were very competitive with the 3 and 2 prescriptions with long rotations, especially on marginal timber producing analysis areas.

The acreage allocation or prescription assignments do not affect the level of rural RVD's due to the fact that they are produced by developed facilities requiring a very small acreage. Of course, the amount of rural RVD's varies directly with the amount of developed facilities and resorts proposed. The amounts of RN are also affected some by the number of developed sites and campgrounds constructed that have a more rustic character. The allocation of developed recreation was done outside the FORPLAN model.

This interaction of developed recreation in several ROS classes masks some of the effects of the FORPLAN prescription assignments.

Approximately 50 percent of the RN in Alternatives A, B, C, and D result from developed facilities and only 33 percent of E. Alternatives B, C, and D have higher acres of RN than A but equal or lower total RVD's. This is due to the additional developed facilities and the effect of varying prescription intensities. SPNM and SPM outputs are directly affected by the number of acres assigned to prescriptions with those ROS classes. Total PNV's of prescriptions with SPNM output such as 5, 6.2, or 6.5 are positive, but do not compete with prescriptions calling for either a more intensively managed recreation (6.1) or timber production (2, 3, 4) prescriptions. It is probably due to lower yields

caused by the very low density of use per acre required to maintain the SPNM experience.

Therefore, the range of RVD's or acres in SPNM is mainly a result of the objectives of the alternative for designated wilderness constrained in the model. See the next page for discussions on Wilderness. Except in Alternative D where, as a result of public involvement, the acres of management prescription 6.2 was set at 20,000 acres. This is the reason SPNM RVD's in Table B-58 are so much higher for Alternative D then any other of the alternatives. While 6.5 management prescription was available, it was not choosen or constrained.

In summary, the trade-off to produce more balanced distribution of ROS classes was some reduction of acres assigned to timber prescriptions. This had the net effect of lowering PNV in the alternatives.

Another non-priced trade-off in alternatives that increase acres in the semi-primitive classes is decreased motorized access. The shift from prescriptions that harvest timber and require roads, to those prescriptions that emphasize dispersed recreation and wildlife with fewer roads is the cause. The difference between alternatives can be seen in Table B-60, showing the total road construction miles needed in the first 50 years of the alternative.

Conversely, for those desiring solitude the increase in road construction is seen as a loss in opportunity. Alternative B, with the lowest road construction miles in the first 50 years, provides the greatest amount of semi-primitive settings and opportunity for solitude.

Other trade-offs of increased access and timber harvesting not quantified may be increased erosion and sedimentation, reduction of overall visual quality, and a decrease in wildlife species sensitive to intrusion. These should be minimized by application of standards and guidelines.

Table B-60 Road Construction Total 50 Years

	A	B	C	D	E
Miles of Road	514	479	680	553	546

Problem Statement: Which areas on the ANF should be recommended for Wilderness designation?[1]

Using the RPA "willingness to pay" value for RVD's and WFUD's and maximizing PNV, the Wilderness management prescriptions are not high enough to be assigned by FORPLAN in any benchmark or plan alternative. Wilderness prescriptions were constrained in each alternative to meet the Pennsylvania Wilderness Act of 1984 and to the RARE II areas in the benchmark.

The Wilderness benchmark (BM5) was run to determine the trade-offs of designating all of the RARE II areas (34,000 acres) to Wilderness. Compared to the Max PNV Benchmark, PNV was reduced $18 million or 4 percent. Long-term sustained yield dropped 7 percent to 110.4 MMBF/year. The drop in LTSY and timber volume between the Max PNV Benchmark and the Wilderness Benchmark run could be reduced or eliminated with more intensive timber management, but the result would be an even lower PNV for the Wilderness Benchmark run. Value of the timber harvest was reduced 4.5 million dollars in the first decade. Three-hundred seventy-four thousand RVD's were produced from the Wilderness prescription in the first decade; 747,000 were produced in the fifth decade.

Table B-61 shows the number of acres assigned wilderness prescriptions in each alternative.

Table B-61 Acres of Wilderness by Alternative (M acres)

	Alternative					BM
	A	B	C	D	E	2
Wilderness Prescription-5.5	10	10	10	10	10	0

Section VIII.D., Analysis of Constraints Within Alternatives, contains detailed descriptions of the effects of wilderness designations in each alternative. Table B-62 shows the estimated effects on priced outputs of wilderness designation compared to the incremental FORPLAN run (constraint set 3) which contained no wilderness prescriptions.

1 This problem statement was developed prior to the Pennsylvania Wilderness Act of 1984, however, the benchmark and trade-off analysis is still valid and was left in the document.

Trade-Offs Between Alternatives

Table B-62 Effects on Priced Outputs of Wilderness Designations When Compared With FORPLAN Run With Constraint Set #3

Parameter	Alternative A	B	C	D	E	BM 2
Change in PNV (MM$)	$- 5(1%)	$-8(2%)	$-16(5%)	$-6(2%)	$-6(2%)	0
Change in B/C	-0.2(3%)	+.5(6%)	+ .5(6%)	-.1(1%)	0(0%)	0
Change in Timber Harvest in Decade 1 (MMBF)	0 (0%)	-33(12%)	-56(11%)	-11(2%)	-17(6%)	0
Change in LTSY (MBF)	0	- 7(12%)	- 8(8%)	- 1(1%)	-4(5%)	0

Table B-63 Cost of Wilderness Mineral Acquisition by Alternative

	Alternative A	B	C	D	E	BM 2
Cost of Wilderness Mineral Acquisition ($MM)	$1.8	$1.8	$1.8	$1.8	$1.8	0

Table B-63 above displays the estimated cost of acquiring wilderness subsurface rights in each alternative. Acquisition is to occur in the first decade of each alternative.

In general, the discounted financial effects and the effects on priced outputs are relatively low. Congress has passed legislation to establish the Hickory Creek and Allegheny Islands Wildenress Areas and also directed that evaluation of other areas for Wilderness in this cycle of planning is not necessary. As a resault of this legislation, Wilderness requirements are the same in all alternatives and the data shown in Tables B-61 and B-63 does not change between alternatives.

Non-priced trade-offs for designating wilderness include:

Option Values - Value which people would place on designation to preserve the option of visiting it in the future.

Existence Values	- Value of designating a wilderness for those who just want to know it exists.
Scientific Research Values	- Value of baseline communities.
Education Values	- Value of tours and ecological study.

The following tables display key activities and their costs, and resource outputs and their values which show the response to problems. The tables are organized by elements which roughly correspond to the problem statements.

Tables include:

B-64 - Key Activities and Outputs by Alternatives

B-65 - Undiscounted Benefits by Alternative

B-66 - Undiscounted Costs by Alternative (Budget)

B-67 - Discounted Economic Indicators by Alternative

The tables not only display the activities and outputs that would be planned for implementation in Decade 1 but a projection of the activities and outputs for future decades. The projections for future decades were necessary to assess long term effects should an alternative and its objectives be continued beyond the first decade. However, any forest plan selected now will be completely revised every 10 to 15 years.

Table B-64 Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Recreation Element					
Trail Construction (miles)					
Decade 1	81	2	0	45	70
Decade 2	80	2	0	41	69
Decade 3	80	2	0	41	69
Decade 4	80	2	0	41	69
Decade 5	0	0	0	0	0
Decade 10	0	0	0	0	0
Decade 15	0	0	0	0	0
Outputs (M RVD's)					
W03 Semi-primitive, non-motorized					
Decade 1	11	19	41	193	16
Decade 2	12	26	41	258	20
Decade 3	23	49	83	480	37
Decade 4	22	56	83	536	40
Decade 5	13	44	41	399	27
Decade 10	13	44	41	399	27
Decade 15	14	60	83	565	41
W05 Semi-primitive, motorized					
Decade 1	9000	5254	2038	4051	4350
Decade 2	9230	5304	2145	4099	4440
Decade 3	9449	5304	2145	4144	4539
Decade 4	9677	5319	2164	4196	4643
Decade 5	9784	5319	2164	4163	4692
Decade 10	9794	5319	2164	4163	4692
Decade 15	9794	5319	2164	4163	4692
W07 Roaded natural					
Decade 1	5345	7539	8674	9289	12347
Decade 2	5951	7483	8990	9958	13638
Decade 3	6600	7417	9024	10415	14739
Decade 4	7425	7417	9389	10733	15814
Decade 5	7789	7417	9509	10997	16404
Decade 10	7955	7370	9464	10968	16364
Decade 15	7995	7370	9464	10968	16364
W09 Rural					
Decade 1	2910	2910	4353	4193	4095
Decade 2	2910	2910	6764	4321	4095
Decade 3	2910	2910	8099	4496	7865
Decade 4	2910	2910	11095	4847	9371
Decade 5	2910	2910	11095	4847	9416
Decade 10	2910	2910	11095	4847	9416
Decade 15	2910	2910	11095	4847	9416

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Wilderness Element					
Outputs (M RVD's)					
Semi-primitive, non-motorized					
Decade 1	101	102	102	103	106
Decade 2	157	157	157	159	164
Decade 3	175	176	176	178	183
Decade 4	193	195	194	196	203
Decade 5	203	204	204	206	212
Decade 10	203	204	204	206	212
Decade 15	203	204	204	206	212
Wildlife Element					
Activities					
Wildlife Hab. Imp. & Mtce.					
Non-Structural (acres)					
Decade 1	35319	19768	17380	23720	31296
Decade 2	39716	19322	17374	27580	41280
Decade 3	48941	20022	17376	35072	43653
Decade 4	49377	20255	17383	36096	44376
Decade 5	51863	20254	17383	36701	44842
Decade 10	49759	20254	17397	36486	46476
Decade 15	51875	19921	17368	36405	44427
Structural (structures)					
Decade 1	132	4	0	59	118
Decade 2	95	3	0	102	133
Decade 3	81	3	0	140	38
Decade 4	81	3	0	34	37
Decade 5	0	0	0	6	0
Decade 10	0	0	0	0	0
Decade 15	0	0	0	0	0
Treatment Types					
Final Harvest (M Acres)[1]					
Decade 1	0	3	2	3	3
Decade 2	0	3	2	3	3
Decade 3	0	3	2	3	3
Decade 4	0	3	2	3	3
Decade 5	0	3	2	3	3
Decade 10	0	3	2	3	3
Decade 15	0	3	2	3	3

1 10% of this acreage receives a clearcut and 90% receives shelterwood seed and removal cuts.

Trade-Offs Between Alternatives

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Thinning (M Acres)					
Decade 1	0	6	3	7	8
Decade 2	0	6	3	7	8
Decade 3	0	6	3	7	8
Decade 4	0	6	3	7	8
Decade 5	0	6	3	7	8
Decade 10	0	6	3	7	8
Decade 15	0	6	3	7	8
Selection (M Acres)					
Decade 1	13	0	0	0	0
Decade 2	13	0	0	0	0
Decade 3	13	0	0	0	0
Decade 4	13	0	0	0	0
Decade 5	13	0	0	0	0
Decade 10	13	0	0	0	0
Decade 15	13	0	0	0	0
Herbicide (M Acres)					
Decade 1	7	0	1	2	2
Decade 2	7	0	1	2	2
Decade 3	7	0	1	2	2
Decade 4	7	0	1	2	2
Decade 5	7	0	1	2	2
Decade 10	7	0	1	2	2
Decade 15	7	0	1	2	2
Hardwood Sawtimber (MMBF)					
Decade 1	40	34	17	36	39
Decade 2	40	34	17	36	39
Decade 3	40	34	17	36	39
Decade 4	40	34	17	36	39
Decade 5	40	34	17	36	39
Decade 10	40	34	17	36	39
Decade 15	40	34	17	36	39
Hardwood Pulpwood (MMBF)					
Decade 1	37	22	10	23	25
Decade 2	37	22	10	23	25
Decade 3	37	22	10	23	25
Decade 4	37	22	10	23	25
Decade 5	37	22	10	23	25
Decade 10	37	22	10	23	25
Decade 15	37	22	10	23	25

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Total Timber (MMBF)					
Decade 1	77	56	27	59	64
Decade 2	77	56	27	59	64
Decade 3	77	56	27	59	64
Decade 4	77	56	27	59	64
Decade 5	77	56	27	59	64
Decade 10	77	56	27	59	64
Decade 15	77	56	27	59	64
Road Constr. (miles)					
Decade 1	30	19	8	15	15
Decade 2	28	11	5	8	17
Decade 3	5	11	9	2	2
Decade 4	4	11	5	4	2
Decade 5	4	9	4	4	1
Decade 10	0	0	1	0	1
Decade 15	0	0	0	0	0
Road Reconstr. (miles)					
Decade 1	6	4	2	6	4
Decade 2	6	2	1	3	5
Decade 3	1	2	2	1	0
Decade 4	1	2	1	2	1
Decade 5	1	2	1	2	0
Decade 10	0	0	0	0	0
Decade 15	0	0	0	0	0
Outputs					
Big-Game (WFUD's)					
Decade 1	632	417	151	293	350
Decade 2	757	422	151	383	491
Decade 3	872	429	151	526	603
Decade 4	963	433	151	624	648
Decade 5	1013	435	151	650	674
Decade 10	1013	435	151	653	675
Decade 15	1013	435	151	653	675
Small-Game (M WFUD's)					
Decade 1	293	270	231	272	263
Decade 2	318	276	220	287	279
Decade 3	341	281	211	301	298
Decade 4	366	292	206	315	313
Decade 5	386	312	210	330	325
Decade 10	490	414	232	404	389
Decade 15	575	500	251	464	447

Trade-Offs Between Alternatives

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Non-Game (M WFUD's)					
Decade 1	626	398	329	443	559
Decade 2	659	395	326	461	609
Decade 3	692	393	324	487	660
Decade 4	729	394	325	509	714
Decade 5	746	393	323	511	740
Decade 10	746	393	323	511	740
Decade 15	746	393	323	511	740
Fish (WFUD's)					
Decade 1	1830	1427	1270	1507	1544
Decade 2	2492	1555	1725	1720	2130
Decade 3	3074	1683	2090	1913	2631
Decade 4	3498	1821	2285	2116	2968
Decade 5	3761	1949	2320	2309	3148
Decade 10	3761	1949	2320	2309	3148
Decade 15	3761	1949	2320	2309	3148
Timber Element					
Activities					
Treatment Types					
Final Harvest (M Acres)[1]					
Decade 1	3	28	66	30	4
Decade 2	3	26	53	31	1
Decade 3	2	20	40	44	5
Decade 4	5	22	42	28	9
Decade 5	5	21	35	37	11
Decade 10	13	25	38	38	17
Decade 15	4	24	37	40	9
Thinning (M Acres)					
Decade 1	11	5	3	87	35
Decade 2	20	13	0	71	92
Decade 3	8	10	37	18	33
Decade 4	20	15	4	70	79
Decade 5	1	12	56	19	6
Decade 10	6	11	7	42	12
Decade 15	12	0	7	1	45

1 10% of this acreage receives a clearcut and 90% receives shelterwood seed and removal cuts.

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Selection (M Acres)					
Decade 1	54	18	2	7	107
Decade 2	51	0	0	0	67
Decade 3	54	18	6	7	108
Decade 4	51	0	5	0	67
Decade 5	54	18	6	7	108
Decade 10	51	0	5	0	67
Decade 15	54	18	6	7	108
Herbicide (M Acres)					
Decade 1	24	0	27	18	46
Decade 2	22	0	27	16	29
Decade 3	6	0	22	26	11
Decade 4	6	0	23	14	10
Decade 5	7	0	18	20	15
Decade 10	7	0	20	21	12
Decade 15	7	0	20	22	14
Road Constr. (miles)					
Decade 1	182	124	167	224	203
Decade 2	176	77	101	128	231
Decade 3	33	77	174	36	33
Decade 4	26	77	106	68	37
Decade 5	26	63	98	64	15
Decade 10	14	0	21	0	7
Decade 15	0	0	0	0	0
Road Reconstr. (miles)					
Decade 1	37	29	43	91	54
Decade 2	35	17	27	52	61
Decade 3	6	17	46	15	6
Decade 4	5	17	27	27	7
Decade 5	5	14	23	25	5
Decade 10	3	0	3	0	2
Decade 15	0	0	0	0	0
Outputs					
Hardwood Timber (MMBF)					
Sawtimber					
Decade 1	157	230	519	347	272
Decade 2	125	311	519	426	241
Decade 3	295	326	519	541	543
Decade 4	271	351	519	555	481
Decade 5	290	373	519	617	624
Decade 10	278	272	519	486	426
Decade 15	218	269	519	491	441

Trade-Offs Between Alternatives

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Pulpwood					
Decade 1	255	337	480	539	554
Decade 2	287	356	480	460	585
Decade 3	117	241	480	345	283
Decade 4	141	216	439	331	345
Decade 5	122	194	394	269	202
Decade 10	134	295	379	400	400
Decade 15	168	298	305	395	350
Softwood Timber (MMBF)					
Sawtimber					
Decade 1	0	0	0	0	0
Decade 2	0	0	0	0	0
Decade 3	0	0	0	0	0
Decade 4	0	0	0	0	0
Decade 5	0	0	0	0	0
Decade 10	0	0	90	0	0
Decade 15	10	0	143	0	15
Pulpwood					
Decade 1	0	0	0	0	0
Decade 2	0	0	0	0	0
Decade 3	0	0	0	0	0
Decade 4	0	0	41	0	0
Decade 5	0	0	86	0	0
Decade 10	0	0	11	0	0
Decade 15	16	0	32	0	20
Outputs					
Total Timber Volume (MMBF)					
Decade 1	412	567	999	886	826
Decade 2	412	567	999	886	826
Decade 3	412	567	999	886	826
Decade 4	412	567	999	886	826
Decade 5	412	567	999	886	826
Decade 10	412	567	999	886	826
Decade 15	412	567	999	886	826
Wildlife User Days (M WFUD's)					
Big-Game					
Decade 1	570	868	1311	1178	1065
Decade 2	577	900	1409	1238	1112
Decade 3	511	823	1278	1159	1005
Decade 4	515	777	1163	1120	1010
Decade 5	458	777	1162	1056	923
Decade 10	424	759	1178	1031	815
Decade 15	440	727	1159	1054	859

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
Small-Game					
Decade 1	51	187	278	228	84
Decade 2	41	249	387	295	82
Decade 3	43	211	348	257	99
Decade 4	52	196	316	228	131
Decade 5	64	188	311	232	152
Decade 10	91	206	303	236	206
Decade 15	64	219	268	206	180
Minerals Element					
Activities					
Acres Impacted (M Acres)					
Decade 1	59	59	59	59	59
Decade 2	58	58	58	58	58
Decade 3	44	44	44	44	44
Decade 4	27	27	27	27	27
Decade 5	19	19	19	19	19
Decade 10	1	1	1	1	1
Decade 15	1	1	1	1	1
Outputs					
USA Minerals (BBTU)					
Decade 1	170	170	170	170	171
Decade 2	528	528	528	528	530
Decade 3	741	741	742	741	744
Decade 4	715	715	716	715	718
Decade 5	550	551	551	550	553
Decade 10	57	57	57	57	57
Decade 15	54	54	54	54	54
Payments to Counties (M$)					
Payment in Lieu of Taxes					
Decade 1	1382	1327	509	509	656
Decade 2	1741	927	509	509	1733
Decade 3	509	509	509	509	509
Decade 4	509	509	509	509	509
Decade 5	509	509	509	509	509
Decade 10	1435	771	509	509	509
Decade 15	1718	721	509	509	509

Trade-Offs Between Alternatives

Table B-64 (con't) Key Activities and Outputs by Alternative

Activity/Output	Alternative A Units	B Units	C Units	D Units	E Units
25% Payment (M$)					
Decade 1	9747	9967	17259	13968	12651
Decade 2	8313	11566	23128	15504	8342
Decade 3	17145	16656	25858	30338	27665
Decade 4	17471	19399	22704	31854	21997
Decade 5	18058	21381	27247	33450	29722
Decade 10	9537	12193	23229	23827	18054
Decade 15	10403	12392	26422	24608	16942
Total Payment (M$)					
Decade 1	11129	11294	17768	14477	13307
Decade 2	10054	12493	23637	16013	10075
Decade 3	17654	17165	26367	30847	28174
Decade 4	17980	19908	23213	32363	22506
Decade 5	18567	21381	27756	33959	29786
Decade 10	10972	12193	23738	24336	18563
Decade 15	11621	13113	26931	25117	17451
Returns to Treasury (M$)					
Decade 1	19650	21540	34615	26543	24581
Decade 2	14075	28741	56575	34510	8538
Decade 3	40073	43030	65277	76047	68622
Decade 4	39998	52371	60805	80966	49541
Decade 5	40652	58307	73511	88256	75178
Decade 10	15241	31527	64112	58957	45491
Decade 15	18140	32088	73656	63076	39535

Table B-65 Undiscounted Benefits by Alternative

Activity/Output	Alternative A Units	Alternative B Units	Alternative C Units	Alternative D Units	Alternative E Units
Elements					
Recreation (M$)					
Decade 1	110364	93217	74717	99860	116602
Decade 2	115402	93440	90617	104447	124345
Decade 3	120694	93300	96939	110492	145877
Decade 4	126902	93477	110714	116240	169868
Decade 5	133638	93354	110602	116389	162817
Decade 10	134536	93103	110355	114508	161793
Decade 15	134633	93257	110752	116045	161927
Wilderness (M$)					
Decade 1	940	946	945	955	985
Decade 2	1453	1641	1461	1476	1522
Decade 3	1624	1633	1633	1649	1701
Decade 4	1795	1805	1805	1823	1881
Decade 5	1881	1891	1891	1910	1970
Decade 10	1881	1891	1891	1910	1970
Decade 15	1881	1891	1891	1910	1970
Wildlife (M$)					
Decade 1	63816	48133	37691	46623	50454
Decade 2	78541	50357	44599	51470	64554
Decade 3	92004	52744	50539	57463	75699
Decade 4	101505	55526	53626	62706	83130
Decade 5	107591	58095	54371	65691	87187
Decade 10	110288	60742	54949	67706	88875
Decade 15	112503	62970	55449	69284	90399
Timber (M$)					
Decade 1	40064	59388	103124	82898	70969
Decade 2	34017	67901	131171	91764	54381
Decade 3	68023	85685	138181	147253	129649
Decade 4	69309	75372	122120	152618	107962
Decade 5	71555	103497	140372	157925	137673
Decade 10	37750	67154	124776	119301	90355
Decade 15	40863	67569	136193	122154	86204
OGM (M$)					
Decade 1	502	559	543	525	442
Decade 2	613	664	626	613	524
Decade 3	503	519	473	471	454
Decade 4	308	310	274	277	273
Decade 5	170	163	138	142	165
Decade 10	35	37	33	32	25
Decade 15	35	37	34	32	26

Table B-65 Undiscounted Benefits by Alternative

Activity/Output	Alternative A Units	Alternative B Units	Alternative C Units	Alternative D Units	Alternative E Units
Support (M$)					
Decade 1	0	0	0	0	0
Decade 2	0	0	0	0	0
Decade 3	0	0	0	0	0
Decade 4	0	0	0	0	0
Decade 5	0	0	0	0	0
Decade 10	0	0	0	0	0
Decade 15	0	0	0	0	0
TOTALS (M$)					
Decade 1	215686	202243	221556	230861	239452
Decade 2	281883	213823	268474	249770	316295
Decade 3	282848	233881	287765	317328	353380
Decade 4	287299	226490	288539	333664	363114
Decade 5	314835	257000	307374	342057	389812
Decade 10	224490	222927	124776	303457	343018
Decade 15	289915	225724	136193	309425	340526
TOTAL RECEIPTS (M$)					
Decade 1	39811	40693	69859	56695	51429
Decade 2	33983	46995	93242	62746	34102
Decade 3	69298	67339	104147	122069	111379
Decade 4	70670	78383	91603	128203	88774
Decade 5	73125	86918	109880	134695	119779
Decade 10	39246	49871	94016	96408	73314
Decade 15	42712	50666	106787	99532	68867

Table B-66 Undiscounted Costs by Alternative (Budgets)

Elements	Alternative A Units	B Units	C Units	D Units	E Units
Recreation (M$)					
Decade 1	18281	12524	11905	16775	14195
Decade 2	10878	10560	12471	13033	13822
Decade 3	11911	10548	12405	13072	14162
Decade 4	11619	10541	13779	14789	14705
Decade 5	11840	10544	12707	13511	14177
Decade 10	11682	10535	12698	13430	14109
Decade 15	11688	10535	12704	13436	14115
Wilderness (M$)					
Decade 1	352	354	354	357	369
Decade 2	367	369	369	373	385
Decade 3	397	400	400	403	416
Decade 4	426	430	429	434	447
Decade 5	455	458	458	463	478
Decade 10	455	458	458	463	478
Decade 15	455	458	458	463	478
Wildlife (M$)					
Decade 1	6585	1919	1852	3003	4025
Decade 2	9351	1845	1799	4890	7249
Decade 3	11770	1949	1800	8096	9630
Decade 4	13873	2021	1800	10417	10613
Decade 5	14982	2058	1800	11035	11138
Decade 10	14530	2059	1800	10992	10979
Decade 15	15100	2058	1800	10988	10974
Timber (M$)					
Decade 1	16662	18659	33470	32286	30369
Decade 2	16241	14990	28056	25822	32926
Decade 3	14379	16775	29221	25141	26246
Decade 4	14395	14889	22906	24872	28941
Decade 5	13882	15837	25199	20976	24457
Decade 10	15045	14243	21231	22353	23069
Decade 15	15100	15037	21378	18828	28951
OGM (M$)					
Decade 1	1133	1148	1136	1138	1135
Decade 2	1106	1120	1108	1112	1108
Decade 3	818	827	819	823	819
Decade 4	491	497	492	496	492
Decade 5	253	255	253	256	253
Decade 10	48	48	48	48	48
Decade 15	46	47	23	47	46

Table B-66 Undiscounted Costs by Alternative (Budgets)

	Alternative				
	A	B	C	D	E
	Units	Units	Units	Units	Units
Support (M$)					
Decade 1	5225	6624	6306	5325	5630
Decade 2	5225	6404	5865	5322	5409
Decade 3	5216	6393	5852	4873	5288
Decade 4	5207	6383	5837	4860	5275
Decade 5	5200	6373	5825	4850	5264
Decade 10	5207	6595	5824	4850	5265
Decade 15	5217	6602	5828	4856	5269
GA (M$)					
Decade 1	9648	8452	10792	11188	10866
Decade 2	8634	7418	9934	9858	15571
Decade 3	8898	7748	10099	10220	11029
Decade 4	9202	7300	9049	10615	11490
Decade 5	9322	7460	9248	9963	10874
Decade 10	9393	7082	8622	10167	10520
Decade 15	9406	7251	8649	9481	11368
TOTAL (M$)					
Decade 1	57886	49680	65752	70072	66589
Decade 2	51802	42707	59602	60410	76470
Decade 3	53389	44641	60596	62628	67590
Decade 4	55213	42063	54292	66483	71963
Decade 5	55934	42986	55490	61054	66641
Decade 10	56360	40804	50681	62303	64468
Decade 15	56437	41779	50681	58099	71201

Table B-67 Discounted Economic Indicators by Alternative

Economic Indicators*	Alternative A Units	Alternative B Units	Alternative C Units	Alternative D Units	Alternative E Units
Discounted Benefits (M$)					
Element					
Recreation	299315	235728	237818	271164	347081
Wilderness	3623	3643	3643	3679	3795
Wildlife	212769	132150	116711	138956	172504
Timber	128833	180613	313387	289668	233988
OGM	1062	1142	1078	1054	934
Support	0	0	0	0	0
TOTAL	645602	553276	672637	704521	758302
Discounted Costs (M$)					
Element					
Recreation	34588	28273	31506	36683	35739
Wilderness	987	993	993	1003	1035
Wildlife	26176	4916	4590	16596	19337
Timber	39050	41554	72253	67491	72970
OGM	2045	2071	2049	2057	2049
Support	13180	16336	15145	12915	13691
GA	23206	19605	25092	26353	30220
TOTAL	139232	113748	151628	163098	175081
Present Net Value (M$)	506370	439528	521009	541423	583221
Change PNV from Max PNV with MMR	-112369	-179811	- 98330	- 77916	- 36118
Benefit/Cost Ratio	4.6	4.9	4.4	4.3	4.3

*Discount rate is 4%.

2. Economic Analysis and Comparison of Benchmarks and Alternatives

a. Benchmarks

The economic analysis of benchmarks is found in Table B-68. This table presents for each benchmark the PNV, total discounted costs, total discounted benefits, distribution of discounted costs by element, and contribution of discounted benefits from each element. The "maximum PNV with minimum management requirements" is considered as the ANF's base benchmark run. This run values all market and non-market goods and services. The minimum management requirements are placed on this run to insure all legal requirements are met as well as management requirements as set forth in 36 CFR 219.27. The common and standard constraints discussed earlier are also placed on this run. The reasons for changes in PNV's between this run and each benchmark will be discussed in the narrative which follows.

Table B-68 Economic Analysis of Benchmarks

Benchmarks	PNV	PV Costs	PV Bene-Fits	Discounted Cost by Element						Discounted Benefit by Element					
				Rec	Wld	Wldlf	Tbr	OGM	Support GA	Rec	Wld	Wldlf	Tbr	OGM	Support
Min Level (#11)	170	11	181	1	0	1	5	2	3	72	0	104	3	1	0
Non-Market (#9)	571	100	670	33	0	23	13	4	27	425	0	209	35	1	0
NOY X09 (#7)	603	177	780	36	0	22	71	4	43	320	0	124	336	1	0
Market (#6)	550	183	734	32	0	1	86	4	60	237	0	97	399	1	0
Wilderness (#5)	601	189	790	36	4	18	82	4	45	300	13	119	356	1	0
Hi OGM (#4)	590	191	781	34	0	14	82	15	46	280	0	112	378	11	0
Herbicide (#3)	612	191	803	36	0	20	85	4	45	313	0	119	370	1	0
Max PNV with MMR's (Base Run - #2)	619	192	811	37	0	19	86	4	46	312	0	118	380	1	0
Max PNV without MMR (1)	639	196	835	36	0	21	88	4	46	305	0	120	410	1	0
Timber Roll-over (10)	586	213	800	37	0	18	106	4	48	305	0	114	379	1	0

Min-level Benchmark (Run #11)

The minimum level management benchmark run is required by the regulations [36 CFR 219.12(e)(1)(i)]. This represents the minimum level of management which would be needed to maintain and protect the ANF as part of the National Forest System. All acres were constrained to receive management prescription 9.1. The PNV of the "max PNV with MMR's" is $619 million; the min level benchmark run PNV is $170 million, a decrease of $449 million or 73 percent. The discounted costs of all elements are very low. Because of needed OGM administration, the OGM element declines the least, 50 percent. The benefits derived from the benchmark can be considered as induced benefits which are received simply by maintaining the Forest as part of the National Forest System. The discounted benefits drop in all elements. The least affected is the wildlife element where discounted benefits are reduced by only 12 percent. The small reduction in the wildlife element relative to the other elements indicate the benefits in this element are not as sensitive to the Forest's management practices as are benefits in other elements.

Non-market Benchmark (Run #9)

The non-market benchmark run valued only RVD's and WFUD's in the objective function. The PNV of this run was $571 million. This represents a $48 million or 8 percent decrease over the base run. The decrease is a result of a 91 percent reduction in the discounted benefits of the timber element. Timber element discounted costs were reduced by 85 percent. The decrease in the timber element costs and benefits was directly related to a shift in management prescriptions allocated. As a result of not valuing market outputs in the objective function 403,000 acres shifted from timber harvesting management prescriptions 2, 3, and 4 to the management prescription emphasizing recreation and wildlife 6.1. The only acres not shifted were 65,720 acres in mangement prescription 3 allocated to an OGM sub-goal.

The emphasis on non-market outputs and the resultant shift from the timber harvesting prescriptions to management prescription 6.1 also had significant effects on the recreation and wildlife elements. The discounted benefits in the recreation element increased by 36 percent. Discounted costs actually decreased in the

element by 11 percent. This indicates that by allocating management prescription 6.1 the value of RVD's can be increased significantly, while at the same time reducing discounted costs in the recreation element. The increases in net values were a result of both increases in the quantity of RVD's produced and an increase in higher valued RVD's. The shift in management prescriptions also shifted the RVD's produced from roaded natural to semi-primitive motorized.

The benefits and costs associated with the wildlife element were also significantly affected. Discounted benefits rose by 77 percent and discounted costs increased 21 percent. Unlike the recreation element, the wildlife element could increase WFUD production but only by increasing costs. However, the increase in benefits more than offset the increase in discounted costs.

In conclusion, maximizing PNV, while valuing only RVD's and WFUD's, decreases total PNV by 8 percent. Management prescription 6.1 has the highest PNV when considering only recreation and wildlife value. The increase in net benefits associated with the recreation and wildlife elements did not offset the loss incurred in the timber element.

Non-declining yield on Hardwood Sawtimber Benchmark (Run #7)

This benchmark run values both market and non-market outputs but requires non-declining yield on hardwood sawtimber. The PNV of this run is $603 million, a decrease of $16 million or 2 percent over the base run. This is not a large change in total PNV when compared to the previous benchmarks. However, examining individual elements indicate that some significant shifts occur in terms of where the contribution to total PNV came from.

Discounted benefits and discounted costs both decline in the timber element. Discounted benefits decrease by $44 million or approximately 12 percent. Discounted costs are reduced by $15 million, a 17 percent decline over the base benchmark run. There is not a significant change in acres allocated to management prescription 3 between the two runs. The major change in allocation occurs between management prescriptions 2 and 4 and 6.1. Management prescriptions 2 and 4 together decrease by 42,500 acres and prescription 6.1 is increased by

41,000 acres. The changes in management prescription 3 occur in the allocation of intensities. Less thinning intensities are being allocated as a result of the NDY of sawtimber requirement. The net effect of the NDY constraint in the timber element is a net decrease in PNV of 10 percent. This is a result of a reduction of 41,000 acres being allocated a timber harvesting prescription and less intensive timber management on those acres allocated to even-aged management.

Overall, the decrease in PNV was 2 percent between this benchmark and the base run. Since the PNV of the timber element declined by 10 percent, the remaining elements must partially offset this loss. The discounted costs and benefits in the wildlife element increase slightly with the net effect being a small increase (3 percent) in the present net value of the element. The recreation element displays a characteristic similar to that seen in the benchmark run valuing only RVD's and WFUD's. That is, the shift from management prescription 2 and 4 to 6.1 caused an increase in both quantity and value of RVD's while actually reducing discounted costs slightly.

In summary, the PNV as a result of requiring NDY yield on sawtimber decreased by 2 percent over the base run. A 10 percent decrease in the net present value of the timber element was partially offset by an increase in the recreation element. Thinnings, selection cuts, and intensive timber management become less desirable when NDY of hardwood sawtimber is required.

Market Benchmark (Run #6)

The "market benchmark" values only those resources having established market values in the objective function. For the ANF, this limits outputs valued to only timber outputs. The PNV of this benchmark declines by $69 million or 11 percent over the Max PNV with MMR's benchmark run. Because the RVD's and WFUD's are not part of the objective function, the emphasis is placed on the production of timber. The effect on the allocation of management prescriptions is to increase the number of acres receiving timber harvesting practices. Furthermore, the financial analysis (our timber prescription economic analysis, see Section III.B.1.f.) indicates that management prescription 3 has the highest PNV of any management prescription on every analysis area when only timber is valued. This results

in a general shift from all management prescriptions to management prescription 3 in the market benchmark run.

The timber element in this run overall shows a net increase in the present value. The discounted benefits increase by $19 million. The increase in value results from more acres being allocated to timber harvesting prescriptions. Because of the increased harvesting the LTSY increases by 8 MMBF/year. The discounted costs of this element do not change even though more acres are allocated to timber harvesting and the volume harvested increased. The reason for this is management prescription 3 is more efficient in terms of economic criteria than other timber harvesting prescriptions. Therefore, by shifting to prescription 3, more volume can be harvested with no increase in discounted costs.

The increase in PNV of the timber element was more than offset by reductions in net values in the recreation and wildlife elements. The net decrease in value of the recreation element was $70 million. The large reduction in the recreation element was a result of decreases in total numbers of RVD's and a shift of RVD's from semi-primitive non-motorized to roaded natural ROS class. The quantity reduction was a result of the change in management prescriptions from 6.1 to 3 and the change from allocating low recreation/wildlife intensities. The shift in ROS class was a result of allocating less of 6.1 management prescription. The overall effect was a reduction in both discounted benefits and costs of the recreation element.

The net decrease in the wildlife element was $3 million. Significant reductions occurred in both benefits and costs. The discounted costs of the wildlife element are reduced to less than $1 million. This indicates that the benefits which do occur are induced and not a result of increased investment in the wildlife element.

The net result on PNV in the market benchmark is a $69 million reduction over the base run. Valuing only market outputs favors timber harvesting management prescriptions, especially 3. This results in increased volumes and values in the timber element. This increase is offset by reductions in the net value of the recreation and wildlife element. The reduction occurs because of a shift away from management prescription 6.1

and the allocation of low recreation/wildlife intensities.

Wilderness Benchmark (Run #5)

The wilderness benchmark constrains all RARE II areas (33,972 acres) to management prescription 5. Total PNV decreases by $18 million or 3 percent from the max PNV with MMR's benchmark run. The constraint requiring 33,972 acres to receive management prescription 5 resulted in 28,000 acres being removed from management prescription 3. The remaining 6,000 acres were made up of management prescription 6.1, 4, and 2.

The redistribution of management prescriptions reduced discounted costs in the recreation, wildlife, and timber elements. Discounted benefits were reduced in both the recreation and timber element. The most significant changes in PNV were in the timber element. The net reduction in this element was $20 million. Volume was approximately 7 percent lower then in the base run.

The net effect on the recreation and wildlife elements were not as great as in the timber element. The recreation element decreased in net value by $11 million, and the wildlife element actually increased in net value by $2 million. These changes exactly offset the net increase of $9 million that occurs in the wilderness element.

In conclusion, the 3 percent reduction in PNV in the wilderness benchmark results from the removal of 28,000 acres from even-aged management and the reduction in timber value and volume harvested. The recreation element decreases slightly in terms of PNV but is offset by the increase in the wilderness element. The net value of the wildlife element actually increases as a result of this constraint.

High OGM Benchmark (Run #4)

The high OGM benchmark estimates the effects of a higher level of oil and gas development than assumed in the base run. (See Section IV.B.2. for explanation of high OGM demand). The result is a $29 million decrease in PNV. This constraint increased the number of acres allocated to management prescription 3 by 27,700. The management prescriptions in which acres were reduced were 2, 4, and 6.1.

Even though the number of acres receiving management prescription 3 was increased, the discounted benefits decreased slightly over the max PNV benchmarks with MMR's. This is because the analysis areas allocated to 3 are not as productive in terms of timber value or volume as other areas on the forest. However, if OGM development does occur, they become more attractive financially than more productive analysis areas. The result is more acres allocated to management prescription 3, but a reduction in volume and value. The discounted costs of the timber element is also reduced because of efficiencies gained from managing timber in OGM areas. The end result is a net increase in the present value of the timber element of $2 million.

The recreation and wildlife elements both show decreases in the discounted costs and benefits as a result of applying the high OGM demand scenario. The net result is a decrease in present value of the recreation and wildlife elements of $29 million and $1 million, respectively. This indicates the best returns in these elements occur outside OGM developments. In addition, the recreation element is more sensitive to OGM development than the wildlife element.

Summarizing these results, the net value of the timber element increases with OGM development. However, increases in OGM administration cost and reductions in net values of the recreation and wildlife elements result in the PNV being 5 percent lower than the base run.

Delay Herbicide Benchmark (Run #3)

In this benchmark run, herbicide was not allowed in periods 1 or 2 but was allowed beginning in period 3. The result was a reduction in PNV of $7 million or 1 percent. This represents the least effected of all benchmarks in terms of PNV. The delaying of herbicide use caused 7,200 acres to shift from management prescriptions 2 and 3 to 6.1.

Herbicides are used to control understory vegetation such as fern and striped maple. The critical assumption made is that these problems occur equally in all analysis areas. Therefore, 50 percent of the most productive sites that are ready for harvest in periods 1 and 2 were shifted to management prescription 6.1 or

else the final harvest was delayed. The result was even though only 7,200 acres were shifted from management prescriptions 2 and 3, the LTSY was reduced by 2 MMBF/year and the net present value of the timber element was reduced by $9 million.

The recreation element shows a small increase of $2 million in net value. In the wildlife element, a small increase in discounted benefits is offset by an increase in discounted costs. The increase in the recreation element is a result of the 7,200 acres allocated to management prescription 6.1.

If our assumptions are correct, the net effect on PNV of delaying herbicide use is a one percent reduction in PNV. The reduction is a result of not allowing herbicide application on analysis areas that would otherwise be ready for harvest.

Maximize PNV without MMR's Benchmark (Run #1)

This benchmark identifies the opportunity costs associated with the application of minimum management requirements. The PNV of this run was the highest of any benchmark run, 3 percent above the Max PNV with MMR's run. The major prescription assignment shifts over the base run occur in management prescriptions 2, 3, and 6.1. Management prescription 3 increased by 40,700 acres, while management prescripion 2 and 6.1 were decreased by 37,000 acres and 3,700 acres, respectively.

Since most of the MMR's we removed were in the timber element, the timber element showed the largest increase in net value as a result of removing MMR's. Discounted benefits increased by $30 million or 8 percent while discounted costs only increased $2 million or approximately 2 percent. The reason for the increase in PNV of the timber element is two-fold. One reason is the shift of 40,700 acres to management prescription 3. The second reason is a shift within management prescription 3 to more intensive timber harvesting intensities. Removing MMR's and the associated shift in prescription and intensity allocation also increased timber harvest volume by 10 percent.

The recreation element showed a slight decrease in net value. Discounted benefits decreased by $7 million and discounted costs by $1 million. The net effect being a

$6 million or 2 percent decrease in net value. The change was a result of removing MMR's making the timber harvesting prescriptions more attractive on those lands which are marginal timber producers when MMR's are imposed.

The wildlife element increased equally by $2 million in both discounted benefits and costs. Therefore, the net effect of removing MMR's on this element was no change in its present net value.

The result of this run indicates that imposing MMR's decrease PNV by 3 percent. As expected, the oppportunity costs of MMR's are greatest in the timber element. The MMR's affect management prescription 3 more than 2; by removing the MMR's, 3 looks more attractive financially. In addition, the MMR's affect timber volume. So by removing this effect, marginal timber land PNV's increase, making even-aged management more attractive than management under a prescription (6.1) which emphasizes recreation and wildlife. All this results in an increase in timber value and volume produced. The recreation element decreases slightly as a result of more emphasis being placed in the timber element. The wildlife element once again shows no significant effect as a result of removing the MMR's.

Timber Rollover Benchmark (Run #10)

The benchmark is a result of two FORPLAN runs. The first maximizes timber production for 50 years. The volumes harvested for the first 5 periods are then constrained in a second run in which PNV is maximized. The result is an allocation that increases timber harvest over the base run by 14 percent, but decreases PNV $33 million or 5 percent. The emphasis on timber production results in a decrease in the acres allocated management prescriptions 6.1 and 3, and an increase in the acres allocated to management prescriptions 2 and 4. The net effect being an increase in acres allocated to timber harvesting management prescriptions.

The timber element decreases slightly in discounted benefits by $1 million. The significant change in this element is a $20 million increase in discounted costs. In order to obtain increased volume, production increases in both acres assigned to timber harvesting prescriptions (primarily 2 and 4) and increases in thinning intensities in management prescription 3

occur. The result is increased volume production, but because management prescriptions 2 and 4, and on certain analysis areas thinning intensities of 3 have lower PNV's then even-aged management without thinnings, the total PNV decreases.

In the recreation element, discounted benefits decrease by $7 million while discounted costs remain unchanged. This results from a change in the value associated with the RVD's produced. The change in total RVD production is small. The shift is a reduction in semi-primitive motorized ROS class, and an increase in roaded natural RVD's. This results in a reduction of 28,700 acres allocated to management prescription 6.1. Since semi-primitive motorized RVD's are valued higher than roaded natural RVD's the discounted value is lower for the same quantity produced.

The discounted benefits and costs decrease slightly in the wildlife element. Discounted benefits decreased by $4 million and discounted costs by $1 million. This is a result of slightly less WFUD's being produced, particularly in the first few periods of the planning horizon. Final harvesting tends to favor WFUD production. Since final harvests are decreased in the first 5 periods over the base run, WFUD production also tends to be reduced.

In conclusion, maximizing timber production decreases PNV. To obtain increased volume, increases in both the allocation of timber harvesting prescriptions and thinning intensities occur. These prescriptions and intensities while increasing volume are not as financially efficient as the prescriptions allocated in the base run. The result is a lower net value in all elements.

Summary

The analysis of PNV's of the benchmark runs indicates, in general, that the timber element is the most sensitive to the constraints added in these runs. The wildlife element seems to be least sensitive to the constraints applied.

The following tables display the key activities (and their costs) and resource outputs (and their values) which responds to our management problems. The tables are organized by elements which roughly correspond to the problem statements.

Tables include:

B-69 - Key Activities and Outputs for Benchmarks

B-70 - Undiscounted Benefits for Benchmarks

B-71 - Undiscounted Costs for Benchmarks

B-72 - Discounted Economic Indicators for Benchmarks

Table B-69 Key Activities/Outputs for Benchmarks

Activity/Output	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi OGM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Recreation D.V.										
Activities										
Trail Const. (miles)										
Decade 1	48	52	0	86	51	0	52	37	53	48
Decade 2	48	52	0	86	51	0	52	37	53	48
Decade 3	48	52	0	86	51	0	52	37	53	48
Decade 4	48	52	0	86	51	0	52	37	53	48
Decade 5	0	0	0	0	0	0	0	0	0	0
Decade 10	0	0	0	0	0	0	0	0	0	0
Decade 15	0	0	0	0	0	0	0	0	0	0
Outputs (MRVD's)										
W03										
Decade 1	50	50	50	50	50	0	56	50	57	50
Decade 2	100	100	100	100	100	0	107	100	108	100
Decade 3	100	100	100	100	100	0	114	100	115	100
Decade 4	100	100	100	100	100	0	115	100	115	100
Decade 5	100	100	100	100	100	0	109	100	108	100
Decade 10	100	100	100	100	100	0	109	100	108	100
Decade 15	100	100	100	100	100	0	105	100	115	100
W05										
Decade 1	1373	1477	622	13404	622	3194	1696	1263	2746	1384
Decade 2	1439	1546	669	13781	630	3194	1770	11326	2847	1450
Decade 3	1458	1567	669	14107	669	3194	1797	1343	2900	1470
Decade 4	1495	1607	688	14451	688	3676	1843	1377	2971	1508
Decade 5	1505	1618	688	14614	688	3676	1856	1385	2998	1518
Decade 10	1505	1618	688	14614	688	3676	1856	1385	2998	1518
Decade 15	1505	1618	688	14614	688	3676	1856	1385	2998	1518
W07										
Decade 1	12098	13109	10544	5003	13754	526	12916	11748	12053	12531
Decade 2	14193	14475	10862	5318	15217	460	14248	12683	13216	13827
Decade 3	15197	15559	10908	5352	16396	394	15300	13337	14159	14842
Decade 4	16532	16974	11268	5717	17906	394	16682	14446	15402	16187
Decade 5	17132	17619	11390	5837	18598	394	17310	14938	15961	16797
Decade 10	17091	117573	11344	5791	18532	348	17264	14805	15915	16751
Decade 15	17091	17573	11344	5791	18552	348	16533	14805	15915	16751

Table B-69 (con't) Key Activities/Outputs for Benchmarks

Activity/Output	Benchmarks: Max PNV No MMR #1 Units	Max PNV With MMR #2 Units	Max PNV Market #6 Units	Max PNV Non-Mkt #9 Units	Timber Rollover #10 Units	Minimum Level #11 Units	Max PNV Hrbicd. #3 Units	Max PNV Hi CGM #4 Units	Max PNV NDY X09 #7 Units	Max PNV Wldnes #5 Units
W09										
Decade 1	4354	4354	4354	4354	4354	0	4354	4354	4354	4354
Decade 2	6764	6764	6764	6764	6764	0	6764	6764	6764	6764
Decade 3	8099	8099	8099	8099	8099	0	8099	8099	8099	8099
Decade 4	11095	11095	11095	11095	11095	0	11095	11095	11095	11095
Decade 5	11095	11095	11095	11095	11095	0	11095	11095	11095	11095
Decade 10	11095	11095	11095	11095	11095	0	11095	11095	11095	11095
Decade 15	11095	11095	11095	11095	11095	0	11095	11095	11095	11095
Wilderness D.V.										
Outputs										
Disp. Rec. (M RVD's)										
Decade 1	0	0	0	0	0	0	0	0	0	374
Decade 2	0	0	0	0	0	0	0	0	0	578
Decade 3	0	0	0	0	0	0	0	0	0	645
Decade 4	0	0	0	0	0	0	0	0	0	713
Decade 5	0	0	0	0	0	0	0	0	0	747
Decade 10	0	0	0	0	0	0	0	0	0	747
Decade 15	0	0	0	0	0	0	0	0	0	747
Wildlife D.V.										
Activities										
Wildlife Hab. Imp.										
Non-Structural (acres)										
Decade 1	10344	9447	1	9739	8779	0	9487	6749	10361	8643
Decade 2	25855	23433	12	16162	22322	0	23412	16740	24930	21454
Decade 3	26354	24903	30	22585	22362	0	24037	17100	26020	21857
Decade 4	26726	24329	31	29009	22361	0	24571	17419	27058	22238
Decade 5	26727	24330	31	29009	22361	0	24594	17419	27083	22239
Decade 10	26727	24330	31	29009	22361	0	24580	17419	27068	22239
Decade 15	26727	24330	31	29009	22361	0	24580	17419	27068	22239
Structural (structures)										
Decade 1	193	176	0	183	163	0	177	126	193	161
Decade 2	289	260	0	120	252	0	259	186	271	238
Decade 3	99	9	0	120	1	0	12	7	20	8
Decade 4	7	8	0	120	0	0	10	6	19	7
Decade 5	0	0	0	0	0	0	0	0	0	0
Decade 10	0	0	0	0	0	0	0	0	0	0
Decade 15	0	0	0	0	0	0	0	0	0	0

Table B-69 (con't) Key Activities/Outputs for Benchmarks

Activity/Output	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi CCM #4	Max PNV NDY X09 #7	Max PNV Widnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Outputs										
Wildlife-Fish (M WFUD's)										
Decade 1	1985	1982	1839	3551	1927	2299	1667	1943	2061	2026
Decade 2	2686	2659	2280	4450	2593	2215	2671	2552	2752	2683
Decade 3	3203	3159	2633	5185	3085	2203	3172	3011	3264	3171
Decade 4	3401	3358	2824	5792	3275	2198	3373	3207	3474	3368
Decade 5	3444	3401	2863	6154	3314	2202	3418	3249	3523	3411
Decade 10	3466	3423	2885	6258	3336	2224	3440	3271	3545	3433
Decade 15	3485	3442	2904	6343	3355	2243	3460	3290	3564	3452
Timber D.V.										
Activities										
Treatment Types										
Final Harvest (M acres)[1]										
Decade 1	27	26	34	5	22	0	18	27	59	23
Decade 2	64	54	63	4	56	0	59	54	56	49
Decade 3	47	35	61	4	28	0	32	38	46	32
Decade 4	68	54	59	4	54	0	57	52	38	50
Decade 5	63	50	63	4	44	0	46	54	37	47
Decade 10	31	43	62	3	21	0	44	39	36	39
Decade 15	44	36	39	4	42	0	35	41	42	36
Thinnings (M acres)										
Decade 1	142	106	145	0	174	1	120	111	3	103
Decade 2	0	0	0	0	44	0	1	0	0	0
Decade 3	99	84	68	0	152	0	84	79	14	81
Decade 4	0	0	0	0	64	0	0	0	1	0
Decade 5	3	1	7	0	20	0	1	4	21	1
Decade 10	81	48	36	6	79	0	49	42	12	43
Decade 15	52	70	93	0	34	0	32	43	17	26

1 10% of this acreage receives a clearcut and 90% receives shelterwood seed and removal cuts.

Table B-69 (con't) Key Activities/Outputs for Benchmarks

Activity/Output	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi CGM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Selection (M acres)										
Decade 1	16	40	4	0	53	0	50	26	2	37
Decade 2	9	22	0	0	20	0	6	17	0	24
Decade 3	16	40	4	0	56	0	50	26	2	37
Decade 4	9	22	0	0	22	0	6	17	21	24
Decade 5	16	40	4	0	56	0	50	26	2	37
Decade 10	9	22	0	0	25	0	6	17	27	24
Decade 15	16	40	3	0	58	0	50	26	2	37
Herbicide (M acres)										
Decade 1	21	30	18	3	27	0	0	25	26	27
Decade 2	36	36	29	2	31	0	0	34	28	35
Decade 3	28	22	37	2	19	0	29	24	23	21
Decade 4	38	31	30	2	32	0	45	28	29	29
Decade 5	37	34	37	2	30	0	45	34	19	31
Decade 10	18	25	36	2	13	0	27	22	20	23
Decade 15	24	22	22	2	30	0	14	23	24	22
Outputs										
Hardwood Timber (MMBF)										
Sawtimber										
Decade 1	523	491	474	48	423	1	444	494	566	449
Decade 2	756	678	776	62	673	1	588	649	566	596
Decade 3	805	7715	814	52	806	1	780	717	566	668
Decade 4	893	780	800	58	839	1	857	745	566	729
Decade 5	951	891	902	69	893	1	869	857	566	827
Decade 10	420	510	608	55	336	1	426	423	566	467
Decade 15	632	566	442	61	772	1	550	546	566	537
Pulpwood										
Decade 1	792	700	800	46	939	0	727	662	459	658
Decade 2	559	514	498	32	689	1	583	507	481	511
Decade 3	510	477	460	42	556	1	391	439	463	439
Decade 4	422	410	470	36	485	1	313	409	417	376
Decade 5	362	297	344	25	363	1	296	295	358	275
Decade 10	875	675	618	39	539	1	725	713	444	633
Decade 15	557	507	649	33	419	0	522	511	344	459

Table B-69 (con't) Key Activities/Outputs for Benchmarks

Activity/Output	Benchmarks: Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi OGM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Softwood Timber (MMBF)										
Sawtimber										
Decade 1	0	0	0	0	0	0	0	0	0	0
Decade 2	0	0	0	0	0	0	0	0	0	0
Decade 3	0	0	0	0	0	0	0	0	0	0
Decade 4	0	0	0	0	0	0	0	0	0	0
Decade 5	0	0	0	0	0	0	0	0	0	0
Decade 10	10	1	26	0	426	0	18	11	82	1
Decade 15	104	98	117	0	53	0	79	79	89	91
Pulpwood										
Decade 1	0	0	0	0	0	0	0	0	0	0
Decade 2	0	0	0	0	0	0	0	0	0	0
Decade 3	0	0	0	0	0	0	0	0	0	0
Decade 4	1	2	4	0	38	0	1	2	23	2
Decade 5	2	4	28	0	106	0	6	4	49	5
Decade 10	10	6	22	0	61	0	2	9	10	6
Decade 15	22	21	66	0	118	0	20	20	25	20
Total Timber Volume										
Decade 1	1315	1192	1274	94	1362	1	1171	1156	1025	1108
Decade 2	1315	1192	1274	94	1362	1	1171	1156	1047	1108
Decade 3	1315	1192	1274	94	1362	1	1171	1156	1029	1108
Decade 4	1315	1192	1274	94	1362	1	1171	1156	1006	1108
Decade 5	1315	1192	1274	94	1362	1	1171	1156	973	1108
Decade 10	1315	1192	1274	94	1362	1	1171	1156	1102	1108
Decade 15	1315	1192	1274	94	1362	1	1171	1156	1024	1108
Wildlife User Day (MWFUD)										
Decade 1	1791	1760	1837	279	1784	51	1737	1813	1630	1663
Decade 2	1967	1942	2003	276	1958	41	1914	1984	1864	1838
Decade 3	1871	1819	1900	264	1876	43	1820	1873	1701	1723
Decade 4	1716	1671	1764	267	1746	52	1658	1731	1540	1586
Decade 5	1653	1609	1669	278	1683	64	1594	1669	1505	1525
Decade 10	1644	1589	1651	305	1569	91	1555	1661	1542	1500
Decade 15	1574	1536	1581	274	1606	64	1520	1595	1460	1452

Table B-69 (con't) Key Activities/Outputs for Benchmarks

	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi CCM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
Activity/Output	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Minerals D.V.										
Activities										
Acres Impacted (acres)										
Decade 1	59034	59034	59034	59034	59034	59034	59029	98004	59034	58717
Decade 2	57829	57829	57829	57829	57829	57829	57824	135659	57829	57521
Decade 3	43837	43837	43837	43837	43837	43837	43834	145277	43837	43608
Decade 4	27398	27398	27398	27398	27398	27398	27395	124427	27398	27257
Decade 5	19101	19101	19101	19101	19101	19101	19109	942191	19101	19001
Decade 10	921	921	921	921	921	921	921	8832	921	917
Decade 15	859	859	859	859	859	859	859	8176	859	855
Outputs										
USA Mineral (M BBTU)										
Decade 1	1	1	1	1	1	1	1	2	1	1
Decade 2	1	1	1	1	1	1	1	5	1	1
Decade 3	1	1	1	1	1	1	1	7	1	1
Decade 4	1	1	1	1	1	1	1	7	1	1
Decade 5	1	1	1	1	1	1	1	6	1	1
Decade 10	1	1	1	1	1	1	1	1	1	1
Decade 15	1	1	1	1	1	1	1	1	1	1

Table B-70 Undiscounted Benefits For Benchmark (M$)

Activity/Output	Max PNV No MMR #1 Units	Max PNV With MMR #2 Units	Max PNV Market #6 Units	Max PNV Non-Mkt #9 Units	Timber Rollover #10 Units	Minimum Level #11 Units	Max PNV Hrbicd. #3 Units	Max PNV Hi CCM #4 Units	Max PNV NDY X09 #7 Units	Max PNV Wldnes #5 Units
	Benchmarks									
Elements										
Recreation										
Decade 1	97821	99712	79186	149097	96535	27723	100438	90690	103989	95864
Decade 2	114595	116946	90566	163488	114079	27369	117552	105551	120592	112702
Decade 3	125934	128744	96510	172441	126186	27014	129280	114975	131815	124104
Decade 4	144394	148385	110296	189238	146136	30763	148796	132911	150820	143344
Decade 5	148102	151604	110588	191037	149512	30763	151900	135277	153662	146364
Decade 10	147854	151355	110340	190789	149264	30515	151651	134560	153413	146117
Decade 15	147857	151358	110342	190789	149264	30515	151707	134562	153475	146119
Wilderness										
Decade 1	0	0	0	0	0	0	0	0	0	3468
Decade 2	0	0	0	0	0	0	0	0	0	5359
Decade 3	0	0	0	0	0	0	0	0	0	5990
Decade 4	0	0	0	0	0	0	0	0	0	6620
Decade 5	0	0	0	0	0	0	0	0	0	6936
Decade 10	0	0	0	0	0	0	0	0	0	6936
Decade 15	0	0	0	0	0	0	0	0	0	6936
Wildlife										
Decade 1	33180	33119	29935	61512	31890	42441	33397	32244	34866	34101
Decade 2	45886	45282	36847	77119	43813	41017	45550	42904	47346	45819
Decade 3	55442	54483	42775	90521	52827	40738	54770	51174	56804	54738
Decade 4	58713	57755	45862	100720	55919	40621	58101	54402	60341	57989
Decade 5	59555	58609	46624	107064	56681	40783	58979	55232	61327	58832
Decade 10	60133	59187	47202	109758	57259	41361	559559	55810	61907	59411
Decade 15	60633	59687	47702	111973	57759	41861	60059	56310	62407	59911
Timber										
Decade 1	105617	104541	101276	12407	90752	1326	100648	104750	97813	97897
Decade 2	153689	137940	147294	12648	136375	1066	140035	139027	127985	129299
Decade 3	213924	190842	226877	11614	182858	1118	199496	197806	142966	181208
Decade 4	232836	202868	208355	118302	202868	1352	169685	195555	141921	188705
Decade 5	254141	251746	248692	18278	236566	1664	241285	235988	142726	232895
Decade 10	91585	109471	178976	12932	107128	2366	112123	99001	140686	108332
Decade 15	148765	125241	120421	14910	196435	1664	118042	120526	156522	120876

Table B-70 (con't) Undiscounted Benefits For Benchmark (M$)

Activity/Output	Benchmarks: Max PNV No MMR #1 Units	Max PNV With MMR #2 Units	Max PNV Market #6 Units	Max PNV Non-Mkt #9 Units	Timber Rollover #10 Units	Minimum Level #11 Units	Max PNV Hrbicd. #3 Units	Max PNV Hi CCM #4 Units	Max PNV NDY X09 #7 Units	Max PNV Wldnes #5 Units
CCM										
Decade 1	545	538	528	542	508	471	538	5707	543	537
Decade 2	613	607	592	657	570	841	608	6425	615	608
Decade 3	451	449	436	519	427	868	450	4757	456	452
Decade 4	253	252	243	314	239	641	253	2701	258	255
Decade 5	123	123	119	167	120	393	124	1363	128	125
Decade 10	31	37	31	37	29	71	33	312	31	31
Decade 15	29	38	31	37	31	71	33	315	32	32
Support										
Decade 1	0	0	0	0	0	0	0	0	0	0
Decade 2	0	0	0	0	0	0	0	0	0	0
Decade 3	0	0	0	0	0	0	0	0	0	0
Decade 4	0	0	0	0	0	0	0	0	0	0
Decade 5	0	0	0	0	0	0	0	0	0	0
Decade 10	0	0	0	0	0	0	0	0	0	0
Decade 15	0	0	0	0	0	0	0	0	0	0
TOTALS										
Decade 1	237163	237910	210925	223558	219685	71961	235021	233391	237211	231867
Decade 2	314783	300775	275299	253912	294837	70293	303745	293907	296538	293787
Decade 3	395751	374518	366598	275095	362298	69738	383996	368712	332041	366492
Decade 4	436196	409260	364756	308574	405162	73377	376835	385569	353340	396913
Decade 5	461921	462082	406023	316546	442879	73603	452288	427860	357843	445152
Decade 10	299603	320050	336549	313516	313680	74313	323366	298683	356037	320827
Decade 15	357284	336324	278486	317709	403489	74111	329841	311713	372436	333874
TOTAL RECEIPTS										
Decade 1	65558	65162	60179	6859	50806	471	61790	69373	68571	60680
Decade 2	109622	994432	102397	7570	92456	841	97146	100392	96284	68095
Decade 3	172091	150181	184402	6775	104894	868	158802	160237	113989	142684
Decade 4	194724	165732	169257	13479	164061	641	152865	159539	115950	153483
Decade 5	217295	215863	211605	13020	199059	393	205769	200017	117277	198927
Decade 10	54904	74009	142132	9221	72116	71	77408	62282	106266	88590
Decade 15	113757	91096	85275	11274	160724	71	84258	85348	131032	74855

Table B-71 Undiscounted Costs For Benchmark (M$)

Activity/Output	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbrod. #3	Max PNV Hi CCM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Elements										
Recreation										
Decade 1	13947	14039	12406	12525	14181	155	13992	13203	13795	13810
Decade 2	14307	14400	12611	12761	14542	125	14353	13411	14155	14031
Decade 3	14257	14352	12544	12725	14493	106	14305	13352	14108	14120
Decade 4	15785	15882	14056	14267	16022	104	15834	14873	15638	15648
Decade 4	14671	14756	12984	13196	14898	103	14709	13898	14511	14526
Decade 10	14663	14748	12976	13098	14890	101	14700	13885	14503	14518
Decade 15	14669	14754	12982	13104	14896	101	14706	13891	14509	14524
Wilderness										
Decade 1	0	0	0	0	0	0	0	0	0	1340
Decade 2	0	0	0	0	0	0	0	0	0	1335
Decade 3	0	0	0	0	0	0	0	0	0	1465
Decade 4	0	0	0	0	0	0	0	0	0	1574
Decade 5	0	0	0	0	0	0	0	0	0	1680
Decade 10	0	0	0	0	0	0	0	0	0	1680
Decade 15	0	0	0	0	0	0	0	0	0	1680
Wildlife										
Decade 1	2371	2216	189	3901	1938	13	2267	1537	2662	2203
Decade 2	8503	7788	138	7653	7188	13	7829	5499	8590	7299
Decade 3	12560	11404	145	10753	10595	13	11464	8090	12495	10606
Decade 4	12770	11619	149	13843	10604	13	11743	8251	13005	10792
Decade 5	12865	11725	149	15443	10604	13	11884	8331	13270	10889
Decade 10	12865	11724	149	14991	10604	13	11881	8331	13267	10889
Decade 15	12865	11724	149	14991	10604	13	11881	8331	13267	10889
Timber										
Decade 1	40844	40025	39867	5423	50854	2128	39920	38483	30995	37793
Decade 2	32295	30713	30236	4897	38727	2074	31151	30349	29229	30055
Decade 3	38163	36769	37230	4909	45133	2074	36062	34428	28679	34792
Decade 4	30546	29339	28841	5098	37828	2074	27630	27495	24887	27797
Decade 5	27077	27525	27691	4902	32786	2074	28080	26331	22254	26103
Decade 10	29110	29053	30403	5094	29945	2074	27915	25912	25101	27133
Decade 15	30094	30053	33771	5126	32827	2074	29877	28485	22638	27864

Table B-71 (con't) Undiscounted Costs For Benchmark (M$)

Activity/Output	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi CGM #4	Max PNV NOY X09 #7	Max PNV Wldnes #5
	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
CGM										
Decade 1	2277	2344	2344	2344	2344	1001	2344	6624	2344	2342
Decade 2	2222	2289	2289	2289	2289	973	2289	7888	2289	2289
Decade 3	1671	1718	1718	1719	1718	723	1718	7260	1718	1718
Decade 4	1032	1058	1058	1059	1058	438	1058	5546	1058	1059
Decade 5	641	655	655	655	655	226	655	3816	655	655
Decade 10	59	63	63	63	63	40	63	484	63	63
Decade 15	57	61	61	61	61	39	61	462	61	61
Support										
Decade 1	6179	6179	6179	3955	6179	1160	6179	6429	6179	6179
Decade 2	5737	5737	5737	3957	5736	1163	5737	5987	5738	5738
Decade 3	5723	5723	5721	3951	5721	1159	5723	5897	5724	5724
Decade 4	5706	5706	5705	3944	5705	1155	5707	5805	5710	5708
Decade 5	5693	5693	5691	3940	5691	1153	5693	5741	5697	5695
Decade 10	5690	5690	5686	3951	5686	1164	5691	5703	5695	5694
Decade 15	5691	5691	5687	3966	5686	1178	5692	5704	5698	5695
GA										
Decade 1	12467	12313	11892	5770	13967	166	12293	12261	10915	12097
Decade 2	11982	11881	10202	6469	12669	166	11965	11995	11700	11850
Decade 3	13389	12943	11185	9982	13979	166	12815	12770	11918	12659
Decade 3	12509	12805	9962	7833	13175	166	11775	11774	11758	11890
Decade 4	11885	11769	9434	7818	12280	166	11899	11333	10995	11612
Decade 10	11854	11949	9855	7625	11932	166	11749	10591	11433	11696
Decade 15	12041	11834	10518	7636	12174	166	11821	11090	10954	11839
TOTAL										
Decade 1	78085	77116	72877	33918	89463	4623	76995	78537	78890	75764
Decade 2	75046	72808	61213	48026	81151	4514	73324	75129	71701	72617
Decade 3	85763	82909	68543	41039	91639	4241	82087	81797	74642	81084
Decade 4	78348	75689	59771	46044	84392	3950	73747	73744	72056	74468
Decade 5	72832	72123	56604	45954	76914	3735	72920	69450	67382	71160
Decade 10	74241	73227	59132	44822	73120	3558	71999	64906	70062	71673
Decade 15	75417	74117	63108	44884	76248	3571	74038	67963	67127	72552

Table B-72 Discounted Economic Indicators by Benchmark

	Benchmarks									
	Max PNV No MMR #1	Max PNV With MMR #2	Max PNV Market #6	Max PNV Non-Mkt #9	Timber Rollover #10	Minimum Level #11	Max PNV Hrbicd. #3	Max PNV Hi CGM #4	Max PNV NDY X09 #7	Max PNV Wldnes #5
Activity/Output	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units
Discounted Benefits										
Element										
Recreation	304883	311631	237015	425339	304809	71842	313032	280138	320021	300366
Wilderness	0	0	0	0	0	0	0	0	0	13362
Wildlife	119545	118065	97066	209055	114577	104580	118831	112176	123589	119442
Timber	409755	380350	398533	34829	379164	3463	369888	378000	335623	356209
CGM	1053	1044	1018	1126	985	1434	1045	11068	1057	1045
Support	0	0	0	0	0	0	0	0	0	0
TOTAL	835236	811090	733632	670349	799535	181319	802796	781382	780290	790424
Discounted Costs										
Element										
Recreation	36392	36624	32225	32606	36981	316	36504	34308	36006	35964
Wilderness	0	0	0	0	0	0	0	0	0	0
Wildlife	21316	19472	402	22879	17766	33	19673	13779	21848	18246
Timber	88375	85819	86141	12892	105919	5284	85057	82153	71335	81764
CGM	4149	4629	4269	4269	4269	1807	4269	15031	4269	4269
Support	14820	14820	14818	9983	14817	2929	14820	15267	114824	14823
GA	31318	30747	45472	16939	33299	419	30636	30246	28797	30322
TOTAL	196370	191751	183327	99568	213051	10788	190959	190784	177079	189065
Present Net Value	638866	619339	550305	570781	586484	170531	611837	590598	603211	601359
Change PNV from Max PNV with MMR	19527	N/A	-69034	-48558	-32855	-448808	-7502	-28741	-16128	-17980
Benefit/Cost Ratio	4.3	4.2	4.0	6.7	3.8	16.8	4.2	4.1	4.4	4.2

b. ALTERNATIVES

Introduction

Table B-73 presents and compares present net value (PNV), discounted costs, and discounted benefits for each alternative. The table is derived from economic analysis of the cost and priced benefits associated with each alternative.

The alternatives are arranged in order of their increasing discounted costs. The costs include both capital investments and operation and maintenance costs. Note that total discounted costs increase among the alternatives from $114 million for Alternative B to $175 million for Alternative E (Table B-74). These extremes represent a range of $61 million. For the same alternatives, total priced benefits increase from $553 million to $758 million, or a range of $205 million. The present net value increases from $440 million for Alternative B to $583 million for Alternative E, a change of $143 million (Table B-75).

Table B-73 Economic Analysis of Alternatives by Increasing Discounted Costs (Millions of Dollars)

Alternatives	Net Values		Costs		Benefits		Discounted Cost by Element						Discounted Benefit by Element					
	PNV	Change PNV	PV	Change PV	PV	Change PV	Rec	Wld	Wldf	Thr	OGN	Support GA	Rec	Wld	Wldf	Thr	OGN	Support
Alternative B	440		114		553		28	1	5	42	2	36	236	4	132	181	1	0
		+66		+25		+93												
Alternative A	506		139		646		34	1	26	39	2	36	300	4	213	129	1	0
		+15		+13		+27												
Alternative C	521		152		673		32	1	4	72	2	40	238	4	117	313	1	0
		+20		+11		+31												
Alternative D	541		163		704		37	1	16	67	2	39	271	4	139	290	1	0
		+42		+12		+54												
Alternative E	583		176		758		36	1	19	73	2	44	347	4	172	24	1	0

Discounted costs for the oil, gas, and minerals (OGM) element does not change among alternatives. The reason is that projected OGM development on the Forest was held constant across all alternatives. Support costs and general administration (GA) costs vary slightly between alternatives. The change in discounted costs occurs at a slower rate than in resource elements since a significant portion of these costs are fixed overhead costs.

Table B-74 Forest Alternatives in Order of Increasing Discounted Costs

	MM$ Costs
1. Alternative B	114
2. Alternative A	139
3. Alternative C	152
4. Alternative D	163
5. Alternative E	175

Table B-75 Forest Alternatives in Order of Decreasing Present Net Value

	MM$ PNV
1. Alternative E	583
2. Alternative D	541
3. Alternative C	521
4. Alternative A	506
5. Alternative B	440

The following narrative gives an explanation of the variations in PNV, discounted costs, and discounted benefits by alternative.

Alternative B

Alternative B is the alternative with the lowest discounted costs ($114 million). Alternative B emphasizes continuing current management direction and resource emphasis as it has unfolded on-the-ground over the past ten years. The alternative also results in the lowest PNV value ($440 million) and the lowest discounted benefits ($553 million).

Alternative B is at the low end of the range of PNV, discounted costs, and discounted benefits because in

this alternative, there is no increased emphasis in any element. All other alternatives place more emphasis on one or more resource elements than the element currently receives. When the increased emphasis occurs, the PNV of the emphasized element more than offsets the reduction, if any, in PNV associated with other elements in that alternative.

The discounted costs and benefits for the recreation element are lower for this alternative than for any other. Both wildlife and timber rank near the bottom in discounted benefits and costs in this alternative. Only Alternative C is lower in wildlife and Alternative A in timber. However, both of these alternatives exceed Alternative B in the PNV of other elements.

Alternative A

Ranked second lowest in total discounted costs is Alternative A. This alternative emphasizes increases (from current levels) in viewing wildlife, hunting, fishing, dispersed recreation opportunities, and designated Wilderness. The discounted cost of this alternative is $25 million higher than Alternative B. Discounted benefits and PNV decrease by $93 million and $66 million, respectively, over Alternative B.

Alternative A ranks first in the discounted costs and benefits associated with the wildlife element. It is second only to Alternative E in the discounted benefits in the recreation element. Alternative E is higher in the recreation element due to increased emphasis in developed recreation and several resorts around the Allegheny Reservoir. This alternative ranks third in discounted costs in the recreation behind Alternatives D and E. The lower costs results from no off-road vehicle trails being provided in Alternative A.

Alternative A ranks last among all alternatives in discounted costs and benefits in the timber element. In this alternative, the emphasis in timber production was decreased over the current situation. The upper limit of total timber harvest volume was 65,000 MCF per decade or approximately 80 percent of current harvest.

Comparing Alternative A to Alternative B (the previous alternative), it is apparent that the element with a decrease in discounted benefits and costs is the timber element. Discounted benefits in this element decreased

by $52 million and discounted costs decreased by $3 million. This is a result of the upper limit constraint of 65,000 MCF of total timber harvest . The decrease is more than offset by increases in the recreation and wildlife elements. In terms of PNV, the recreation element increased by $58 million, while the absolute increase in wildlife is $60 million.

Alternative C

Alternative C ranks third lowest in discounted costs. The alternative emphasizes the production of goods and services having established market values. Production increases (from current levels) are planned for timber and fee-producing developed recreation. Discounted benefits increase over Alternative A by $27 million to $673 million. PNV goes from $506 million in Alternative A to $521 million in Alternative C, an increase of $15 million.

As a result of the emphasis on outputs with market values, Alternative C ranks first in discounted benefits in the timber element. Discounted costs in the timber element are $72 million which is only exceeded by the discounted costs in Alternative E ($73 million). The discounted benefits and costs of the wildlife element in Alternative C are lower than any other alternative. The recreation element has the second lowest discounted costs and benefits. This shows that the increased emphasis in developed recreation and resorts of Alternative C do not offset the effects of decreased emphasis in dispersed recreation.

In comparison to the previous alternative (Alternative A), the increase in the timber element more than offset any reductions that occur in the other elements. The absolute increases in discounted benefits in the timber element is $184 million. Decreases occur in discounted benefits of $62 million in the recreation element and $96 million in the wildlife element. In terms of discounted costs, the recreation element decreases by $2 million and the timber element increases by $33 million. Discounted costs decrease by $22 million in the wildlife element. The increase in both discounted benefits and costs of the timber element is a result of increased emphasis in harvesting over Alternative A.

Alternative D

Alternative D is the alternative displaying the second highest discounted cost, a value of $163 million. This is an increase of $11 million over Alternative C. The purpose of Alternative D emphasizes increases in the production of both market and non-market goods and services over current levels. The result is Alternative D ranks second highest in PNV when compared to other alternatives, with a value of $541 million. Alternative D's PNV is $20 million higher than Alternative C. Its discounted benefits are $31 million greater than Alternative C.

With the exception of the timber element, Alternative D discounted benefits and costs increase for every element over Alternative C. Because more emphasis is placed on non-market goods, discounted benefits increase for the recreation and wildlife elements by $33 million and $22 million, respectively, over Alternative C. Discounted costs in Alternative D increase by $5 million in the recreation element and $12 million in the wildlife element over Alternative C.

The increase in PNV in the recreation and wildlife elements more than offset the $18 million decrease in PNV of the timber element when compared to Alternative C.

Alternative E

The alternative which has the highest total discounted costs is Alternative E. Discounted costs increased by $12 million over Alternative D. This alternative also has the highest PNV and the highest discounted benefits. The PNV is $583 million, an increase of $42 million over Alternative D. The discounted benefits are $758 million representing a $54 million increase. As in Alternative D, Alternative E emphasizes increases in the production of both market and non-market goods and services. However, in Alternative E, the increases are greater than in Alternative D.

The discounted benefits are higher in this alternative than in any other alternative for the recreation element. This increase is due to the increased emphasis in this alternative on both dispersed and developed recreation along. Only Alternative A has higher discounted wildlife costs and benefits.

In comparing Alternative E with the previous alternative (Alternative D) discounted costs increase in all elements, except recreation, which decreases by $1 million.

Discounted benefits increase for all elements except timber compared to Alternative D. In the timber element, discounted costs for Alternative E increase by $6 million over Alternative D, while discounted benefits decrease by $56 million. This increase in costs and decrease in benefits is a result of requiring longer rotations in Alternative E. This net decrease in the timber element of $62 million is more than the offset by net increases of $77 million and $30 million for the recreation and wildlife elements, respectively.

PNV of Max PNV with MMR Benchmark versus Alternatives

This section highlights the specific constraints (not constraint sets) accounting for significant differences in PNV between the max PNV benchmark with MMR's valuing market and non-market outputs and the alternatives. The reader should be cautioned that every constraint set will not be evaluated in this section. A more detailed explanation can be found in Section VIII.D. Analysis of Constraints within Alternatives. This section only serves to identify for the reader those individual constraints having large impacts on PNV. The PNV of the max PNV with MMR's benchmark run was $619 million.

Alternative A has a PNV of $506 million. This is a decrease of $113 million over the base run. This occurs primarily as a result of decreasing the total volume harvested. The upper limit on total volume was 489 MMBF per period. The LTSY went from 119 MMBF/year in the benchmark to 49 MMBF/year in Alternative A. Adding this constraint significantly reduced PNV.

Alternative B has a PNV of $440 million, a reduction of $179 million over the max PNV with MMR's benchmark run. In Alternative B, the addition of constraint sets 2, 3, and 5 causes large decreases in PNV. Constraint set 2 requires harvesting within + 10 percent of the RPA timber target and also requires at least 45 percent of total volume to be hardwood sawtimber in every period. Both of these constraints have significant effects on PNV. Requiring RPA timber target to be met causes LTSY to be reduced from 119 MMBF/year to 62 MMBF/year, a reduction of 57 MMBF/year. In the benchmark run where

NDY of hardwood sawtimber was required, PNV dropped $16 million, indicating not allowing deviation in hardwood sawtimber reduces PNV.

Constraint 3 required only low intensity recreation/wildlife intensities to be allocated in Alternative B. This was the most significant constraint added in constraint set 3. The effect of this constraint set reduced PNV by $76 million, indicating constraining to low intensity recreation and wildlife reduces PNV significantly.

The PNV in Alternative C is $521 million or $98 million less than the benchmark run. This alternative has several constraints which also had significant effects on PNV's of other alternatives. There is a requirement of NDY of hardwood sawtimber placed on this alternative as well as the requirement to select only low recreation/wildlife intensities. The remaining requirements in this alternative were constraints on Buzzard Swamp and on 70 percent of the Allegheny Reservoir Face. These two constraints only affected 6,868 acres or one percent of the ANF. Therefore, the reductions on PNV resulted almost entirely from the NDY constraint and the requirement to select low intensity recreation and wildlife.

The PNV in Alternative D is $541 million, a decrease of $78 million from the base run. This alternative originally had NDY on hardwood sawtimber. It is the constraint which affected total PNV of this alternative the most. Removing this constraint in the feasibility constraint set (#5) allowed PNV to increase from the previous constraint set. No individual constraint had a significant effect on the PNV of this alternatives once NDY of hardwood sawtimber was removed.

Alternative E has a PNV of $583 million. This is the highest PNV of any alternative. It is $36 million less than the max PNV with MMR's benchmark run. The constraint having the most significant effect on PNV is one requiring final harvest not to occur prior to culmination of mean annual increment of dollars. The effect of this constraint is to increase the minimum age at which stands can be final harvested to approximately 120 years. A significant portion of the ANF is in the 60 to 80 year age class. This constraint postpones harvesting in this age class for 40 to 60 years. The financial analysis indicates maximizing PNV occurs prior

to age 120 years. These facts indicate that total PNV will drop if we increase the beginning age for final harvest.

The three constraints which have the most significant effect on PNV of the alternatives are:

- Requiring NDY of hardwood sawtimber.
- Requiring final harvest not to begin prior to culmination of mean annual increment of dollars.
- Constraining low intensity recreation and wildlife prescriptions to be allocated in large amounts.

Other constraints, such as special area management, constraints on conversion prescription, wilderness constraints, etc., do not seem to have a great effect on PNV, at least at the levels constrained to in these alternatives. The constraints identified as having significant implications are based on the results of the incremental and benchmark analysis. They have not been tested separately but seem to contribute most in significantly reducing PNV.

4. Discuss Factors Responsible for Differences in Resolution of ICO's.

   See Section VIII C.1. for a discussion of factors primarily responsible for differences in the resolution of the problem statements.

D. Analysis of Constraints Within Alternatives

Introduction

This section contains the tabular results and discussion of completing the incremental constraint analysis described in Section VIII.A. and B. In summary, FORPLAN constraints were developed to achieve the management objectives and direction for each forest plan alternative. To estimate the effects of addressing the problem statements, the FORPLAN constraints were grouped into sets, with each set addressing one problem statement.

Four constraint sets were used for each alternative to address problems:

Constraint Set #	Problem Statement Addressed
2	Timber
3	Recreation/Wildlife
4	Wilderness/NRA
5	Public Review (Alternative B)
6	Public Review (Alternative D)

Constraint set 1 contained the same constraints used in the Max PNV benchmark to ensure feasibility. Constraint set 1 contains the same constraints in every alternative, and thus always has the same effects. It will not be discussed in this section.

As a result of public comment on the DEIS, constraint set 5 was added to Alternative B and constraint set 6 was added to Alternative D. Constraint set 5 for Alternative B constrains the model to zero acres of herbicides in all periods. The additional constraint set in Alternative D adds several constraints which respond to issues identified by the public.

See Section VII.C.2. for a complete description and rationale for each constraint and constraint set.

This section, then, discusses the effects of adding each constraint set incrementally to FORPLAN.

The changes in activities/outputs and effects, discounted costs, and discounted benefits are shown as each constraint set is added.

The order in which the constraint sets are added is important in interpreting results. We have added the constraints with the greatest probable impact on opportunity costs first.

The following set of tables are provided for each alternative:

Title

- Management Prescription Assignments from FORPLAN for each Alternative by Constraint Set
- Economic Indicator from FORPLAN for each Alternative by Constraint Set
- Economic Indicators from FORPLAN for each Alternative by Constraint Set by Element.
- Key Activity/Output and Budget/Receipt Summary from FORPLAN for each Alternative by Constraint Set

General Effects of Constraints

All constraints which place an upper limit on hardwood timber volume limit the PNV. Thus, raising the upper limits on hardwood volume will raise the PNV in those alternatives where we use the constraint. When the upper limit on timber volume is reached, FORPLAN assigns the next highest PNV prescription, 6.1, because of the high value of WFUD's and RVD's produced in that prescription.

When older rotations are used in Alternatives A and E, substantial acres of prescription 2.2 are assigned. Reasons are two-fold:

- PNV's of the 2 prescriptions become more competitive with 3 because of the delayed regeneration cuts in 3. In 2, harvests can begin in decade 1.

- To maintain a high non-declining yield, the model schedules the regeneration harvests which are available early in 2 until AA's reach age 120 years in prescription 3.

Wilderness constraints do not significantly effect PNV's or harvest flows.

Unless they are not allowed in the solution (constrained out), the high investment recreation and wildlife prescription intensities are nearly always selected. Their high PNV's are caused by the amounts and assigned values of RVD's and WFUD's. Thus, constraints which limit the assignment of high investment intensities, will reduce the PNV.

Non-declining yield on total timber volume is binding on the solution in all benchmarks and alternatives. Allowing timber volumes to fluctuate (increase in some decades, decline in others) would increase PNV's.

ALTERNATIVE A: Alternative A emphasizes the production of goods and services that maximize social, non-consumptive benefits, and the production of high-quality hardwoods. Constraint set 1, as in all alternatives, represents those constraints used in the maximize present net value benchmark run. This represents a base or starting point from which to assess the effects of adding the additional constraint sets which address the problem statements.

Constraint set 2 addresses the timber problem statement. In Alternative A the emphasis is on growing high-quality hardwoods. Timber volume is reduced from current levels. Hardwood sawtimber volume has a lower limit of 100 MMBF for all periods and total timber volume has an upper limit of 412 MMBF for periods 1 to 15. No oak conversion prescriptions were allowed.

The effect on PNV of adding these constraints is a reduction of $65 million (15%) from the base run. However, the benefit/cost ratio increases from 5.3 in the base run to 7.9 after adding constraint set 2. Table B-78 which shows discounted benefits and costs reveals that total discounted costs were reduced by 47 percent while discounted benefits only dropped 20 percent by adding constraint set 2. Both the recreation and wildlife elements increased in terms of discounted benefits after adding constraint set 2. The discounted benefits from the timber element were reduced by $219 million after the addition of the timber problem statement. This is not surprising since the timber constraint set constrained the upper limit of timber harvest. In fact, the upper limit of 412 MMBF of total timber volume per period was binding in every period.

Table B-76 displays the management prescription allocation. The major shift between constraint sets 1 and 2 was a shift from management prescription 3 to management prescription 6.1. This represents a shift from even-aged management of timber to a prescription that emphasizes recreation and wildlife with little timber harvest.

In summary, the reduced timber harvest level is responsible for the reduced level of benefits and costs from the timber element and the increased levels in recreation and wildlife. Throughout all alternatives, the activities and outputs associated with timber harvesting are reduced between constraint sets 1 and 2 while recreation and wildlife activites and outputs are increased. The shift from roaded natural RVD's to semi-primitive motorized RVD's is due to the shift from management prescription 3 to 6.1.

Constraint set 3 addresses the recreation and wildlife problem statement. The emphasis in this constraint set is to provide widely scattered, dispersed recreation use and intensive management of game and non-game species which favor a mature northern hardwood timber type. The Allegheny Reservoir Face is constrained to management prescription 6.1 to provide a semi-primitive motorized opportunity around the reservoir. No even-aged management is allowed on steep slopes and bottomlands in order to maintain visual quality, soil, and water objectives. Buzzard Swamp and existing aspen sites are constrained to intensive management for wildlife. The high recreation/wildlife intensity will be assigned to all acres of the forest. Finally, rotation ages will begin at culmination of mean annual increment of value per acre rather than volume to ensure larger trees per acre.

The effect on PNV of all these constraints is a reduction of $15 million (4%) over constraint set 2. The benefit/cost ratio drops to 7.4 (see Table B-77).

Of all the constraints added, the only ones which are binding are the 11,374 acres required to receive an aspen management prescription and some of the areas along the Reservoir Face constrained to management prescription 6.1. However, the acreage involved is only

4 percent land base. The constraints on even-aged management on steep slopes and bottomlands and zero acres of low and medium recreation/wildlife intensity were not binding. The only other constraint was the harvesting constraint not to final harvest prior to culmination of mean annual increment of dollar value.

This constraint resulted in final harvest ages starting at age 120 instead of age 60. The results of the financial analysis on PNV's of individual prescriptions indicates, in general, the PNV's of timing options harvested at younger ages are greater than PNV's of older age timing options. Thus, increasing the age of regeneration harvests will generally reduce PNV.

Table B-76 reveals that the major shift in management prescription allocation between constraint sets 2 and 3 is an increase of 86,000 acres allocated to uneven-aged management and decrease of 92,000 acres in management prescription 3. This occurs for two reasons: 1) the PNV of management prescription 2 becomes more competetive with 3 as a result of postponing final harvest in 3, and 2) the non-declining yield requires some timber be harvested early - because the final harvest is delayed in 3 this timber is picked up through selection harvest in 2. This is illustrated in Table B-79 where the amount of final harvest and thinning acres are reduced between constraint sets 2 and 3 while the acres of selection harvest is doubled. No significant changes in RVD's and WFUD's occur between constraint sets 2 and 3.

Constraint set 4 requires Hickory Creek and the Allegheny River Islands to be allocated to Wilderness and the NRA's allocated to management prescription 6.1. As a result of the addition of this constraint set, the allocation of acres to management prescription 6.1 decreases by 13,000 acres. Acres in management prescription 2 decreased by 2,000 acres and increased by 4,000 acres in prescription 3. PNV is reduced by one percent from $364 million in constraint 3 to $359 million in constraint set 4. Table B-78 indicates that, in terms of discounted benefits and costs, the reduction in PNV is due to the increased costs of wilderness management and the fact that although discounted benefits in wilderness are $4 million, this does not offset the $7 million loss of discounted benefits in the recreation element.

Summarizing the effects of the constraint sets in Alternative A, the largest impact occurs as a result of reduction in timber harvest volume in constraint set 2. The effects on discounted benefits and costs of the subsequent addition of constraint sets 3 and 4 are low compared to constraint set 2. It is interesting to note the trend in benefit/cost ratio from constraint set 1 to 4. The ratio goes from 5.3 to 7.9 to 7.4 to 7.2. This is due mainly to the reduction in total discounted costs between the Max PNV benchmark and the constraint set.

Table B-76: Management Prescription Assignments from FORPLAN For Alternative A by Constraint Set

Management Prescription		Total M Acres Assigned CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilder./NRA
Aspen, Grouse	1	0	0	11	11
Uneven-aged, Non-game	2	62	21	107	105
Even-aged, Turkey, Deer	3	388	158	66	70
Even-aged, Softwood	4	19	0	6	5
Wilderness	5	0	0	0	9
Recreation, Wildlife	6.1	29	315	302	289
Even-aged 10 yr. SPNM 30 yr.	6.2	1	3	2	1
Wetland Wildlife	6.3	0	0	0	0
Long Rotation Primitive	6.5	0	0	0	0
Developed Recreation	7	0	0	0	0
Special Areas	8	0	0	0	0
Minimum Level	9.1	6	6	9	12

TABLE B-77: ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE A BY CONSTRAINT SET

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilderness/NRA
PRESENT NET VALUE (MM$)	444	379	364	359
CHANGE PNV FROM MAX PNV WITH MMR		-65	-15	-5
BENEFIT/COST RATIO	5.3	7.9	7.4	7.2

*Discount rate 4%.

TABLE B-78: ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE A BY ELEMENT

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilderness/NRA
DISCOUNTED BENEFITS (MM$)				
Element				
Recreation	157	240	248	241
Wilderness	0	0	0	4
Wildlife	22	48	46	45
Timber	359	140	125	126
OGM	1	1	1	1
Support	1	1	1	1
TOTALS	539	429	420	417
DISCOUNTED COSTS (MM$)				
Element				
Recreation	8	5	6	6
Wilderness	0	0	0	1
Wildlife	17	16	13	12
Timber	71	27	34	34
OGM	2	2	2	2
Support	3	3	3	3
TOTALS	101	54	57	58

Discount Rate 4%

TABLE B-79: KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE A BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT		CONSTRAINT SETS (CS)							
		CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
		M Units	M$	M Units	M$	M Units	M$	M Units	M$
TIMBER									
LTSY (MBF/Year)		119		41		41		41	
Timber Volume (MBF/Decade)									
Hardwood Sawtimber									
Decade	1	492	64320	155	25049	162	26666	157	26020
	2	678	93272	274	38808	126	20134	125	20080
	3	715	149055	288	53201	296	55459	295	55525
	4	780	164470	272	58325	272	57146	271	57092
	5	891	214730	295	68548	290	59718	290	59685
	10	510	72898	211	36757	270	23742	278	25923
	15	566	87097	269	55286	221	30324	218	29168
Softwood Sawtimber									
Decade	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0
	10	1	19	0	0	0	0	0	0
	15	98	2782	0	0	12	122	10	146
Hardwood Pulpwood									
Decade	1	700	0	257	0	250	21	255	21
	2	514	0	138	0	286	22	287	21
	3	477	0	124	0	116	0	117	0
	4	410	0	140	0	140	6	141	6
	5	297	0	117	0	122	0	122	0
	10	675	0	201	0	142	19	134	18
	15	507	0	143	0	159	12	168	0
Softwood Pulpwood									
Decade	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0
	4	2	13	0	0	0	0	0	0
	5	4	29	0	0	0	0	0	0
	10	6	45	0	0	0	0	0	0
	15	21	169	0	0	20	159	16	93

TABLE B-79: (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE A BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
TIMBER (con't)								
Total Timber Volume								
Decade 1	1192	64320	412	25049	412	26687	412	26041
2	1192	93272	412	38808	412	20156	412	20101
3	1192	149055	412	53201	412	55459	412	55525
4	1192	164483	412	58325	412	57152	412	57092
5	1192	214759	412	68548	412	59718	412	59685
10	1192	72962	412	36757	412	23761	412	25941
15	1192	90048	412	55286	412	30617	412	29407
Final Harvest (acres)								
Decade 1	26		7		3		3	
2	54		21		3		3	
3	35		8		2		2	
4	54		21		5		5	
5	50		14		4		5	
10	43		16		13		13	
15	36		14		5		4	
Thinnings (acres)								
Decade 1	106		40		10		11	
2	0		0		18		20	
3	84		28		7		8	
4	0		0		18		20	
5	1		0		1		1	
10	48		24		5		6	
15	40		0		8		12	
Selection (acres)								
Decade 1	40		21		54		54	
2	22		0		52		51	
3	40		21		54		54	
4	21		0		52		51	
5	40		21		54		54	
10	21		0		52		51	
15	40		21		54		54	

TABLE B-79: (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE A BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
TIMBER (con't)								
Herbicide (acres)								
Decade 1	30	1044	13	451	24	833	24	824
2	36	1264	11	382	23	801	22	785
3	22	790	6	230	6	206	6	204
4	31	1057	12	403	6	208	6	207
5	34	1159	9	333	7	241	7	242
10	25	869	8	295	7	239	7	245
15	22	779	10	344	7	248	7	233
RECREATION/WILDLIFE								
SPNM W03 (RVD/Decade)								
Decade 1	0	0	31	284	20	187	121	1039
2	0	0	35	327	23	216	169	1563
3	0	0	66	610	44	404	198	1862
4	0	0	68	634	45	422	215	1991
5	0	0	42	387	28	258	216	2005
10	0	0	42	387	28	258	216	2005
15	0	0	70	646	46	430	227	2102
SPM W05 (RVD/Decade)								
Decade 1	898	6994	9461	73701	9004	70145	8627	67207
2	920	7165	9699	75555	9232	71921	8846	68913
3	942	7336	9937	77409	9460	73697	9065	70619
4	970	7558	10181	79313	9695	75527	9293	72393
5	980	7644	10300	80240	9809	76415	9400	73227
10	980	7644	10300	80240	9809	76415	9400	73227
15	980	7644	10300	80240	9809	76415	9400	73227
RN W07 (RVD/Decade)								
Decade 1	8632	46614	2804	15140	3804	20542	3881	20955
2	9617	51929	3041	16423	4234	22861	4379	23324
3	10601	57245	3279	17706	4663	25180	4758	25693
4	11651	62916	3582	19342	5158	27852	5262	28415
5	12176	65751	3733	20160	5405	29188	5514	29775
10	12130	65502	3688	19913	5360	28941	5468	29528
15	12130	65502	3688	19913	5360	28941	5468	29528

TABLE B-79: (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE A BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS) CS1 Max PNV BM M Units	M$	CS2 Timber M Units	M$	CS3 Rec/Wldlf M Units	M$	CS4 Wilderness/NRA M Units	M$
RECREATION/WILDLIFE (con't)								
Big-Game (WFUD/Decade)								
Decade 1	1635	36400	1253	27884	1201	26738	1202	26767
2	1944	43267	1456	32389	1332	29657	1334	29698
3	2007	44680	1562	34760	1382	30762	1383	30799
4	1900	42299	1596	35525	1479	32933	1478	32909
5	1847	41123	1632	36318	1474	32811	1471	32762
10	1835	40853	1610	35850	1441	32079	1437	32002
15	1817	40447	1609	35813	1458	32449	1453	32311

ALTERNATIVE B: This alternative emphasizes continuing current management direction. Constraint set 1 is again the max PNV benchmark. Constraint set 2 addresses the timber problem statement. The constraints in this set attempt to follow the objectives of current timber management on the ANF. Hardwood sawtimber is required to be at least 45 percent of the total harvest. The constraint for timber harvests are based on the RPA targets. A minimum of 2,000 acres of final harvest per year is required. No oak conversions and no conifer management on low stocked areas is permitted.

Of the constraints described, the only one binding is total harvest volume in period 1. This constraint is binding at its upper limit of 660 MMBF of total timber volume harvested in the first period. The shadow price on this constraint is $480 per MBF. Table B-81 shows a decrease in PNV between constraint sets 1 and 2 of $44 million . However, benefit/cost ratio increases from 5.3 to 6.8. Table B-82 displays a large decrease in both discounted benefits and costs associated with the timber element between the two constraint sets. The increases in discounted benefits and costs occur in the recreation and wildlife elements. The reason for this is that the RPA timber targets result in about one-half the volume harvested in the benchmark run. As a result of this, Table B-80 shows a shift in management prescription allocation from the timber harvesting prescriptions of 2 and 3 to the prescription that emphasizes recreation and wildlife - 6.1. This reduction in timber and increase in recreation and wildlife explains the variations in activities and outputs that occur between constraint sets 1 and 2 in Table B-83.

Since 19,000 acres of the conifer management prescription (4) was allocated in the benchmark run, the fact that the conifer management prescription was not allowed into solution may also effect the PNV. However, the results of the financial analysis indicates that PNV's in management prescription 3 are higher than management prescription 4 for all analysis areas. Therefore, the reason the 4 management prescription is allocated in the benchmark run is due to the large volume being harvested and the requirement of NDY. The volume in Alternative B is greatly reduced and, as a result, 4 would probably not have come into solution even if it had not been constrained out.

Constraints Within Alternatives

Constraint set 3 describes the current situation as it relates to recreation and wildlife on the ANF. Three intensities of recreation and wildlife were developed with the low intensity representing the current situation. The constraint used was to not allow the medium and high intensities into solution. Other constraints were to constrain the 8,695 acre of the Allegheny Reservoir Face and Buzzard Swamp to minimum level management (9.1). The Reservoir Face was allocated 9.1 to maintain visual quality objectives and recreation potential of the area. Buzzard Swamp was allocated 9.1 with additional costs and outputs being added outside FORPLAN to manage the area under management prescription 6.3

Table B-81 shows a decrease in PNV of $76 million after adding this set of constraints. The benefit/cost ratio continues to rise going from 6.8 to 7.4. The largest reduction in discounted benefits and costs (Table B-82) occurs in the recreation and wildlife elements. This was expected since medium and high intensity recreation and wildlife were constrained out of solution. Unless a management prescription which has a choice of intensities for recreation and wildlife is constrained otherwise the high intensity is always chosen over the low. Activities and outputs (Table B-83) associated with the timber element change very little between constraint sets 2 and 3. The RVD's and WFUD's are reduced in all ROS classes due to constraining medium and high intensity recreation and wildlife out of solution.

Table B-80 indicates no major changes in management prescription allocation between constraint sets 2 and 3. The only reduction was a loss of 18,000 acres in management prescription 6.1. These acres were redistributed over four management prescriptions.

Management prescription 9.1 was allocated an additional 9,000 acres, management prescription 3 and 1 received 4,000 additional acres each, and the uneven-aged prescription of 2 received 1,000 more acres when constraint 3 was added to Alternative B. The 9,000 acre increase in 9.1 is the result of constraining the Reservoir Face to 9.1. The increase in 1 from 0 to 4,000 acres is due to management prescription 1 having a higher PNV on some areas than low intensity 6.1. In

addition, 1 adds some timber volume into solution. The increase in management prescriptions 2 and 3 was a result of the acres in Buzzard Swamp and the Reservoir Face which were formerly allocated 3 and/or 2 being forced to 9.1. As a result, less productive areas were brought into solution requiring more acres to be harvested and resulting in an increased allocation to management prescriptions 2 and 3.

Constraint set 4 constrains Hickory Creek and the Allegheny River Islands to Wilderness (management prescription 5) and the Allegheny NRA to management prescription 6.1. Table B-80 indicates that adding constraint set 4 causes a reduction in PNV of $8 million. The benefit/cost ratio continues to increase from 7.4 to 7.9 after constraint set 4 is added. Table B-79 shows a 9,000 acre increase in 5, 16,000 acre increase in 6.1, and 3,000 acres increase in 9.1. The increase is offset by decreases in management prescriptions 2 and 3. The decrease in management prescriptions that harvest timber resulted in a drop in LTSY from 67 MMBF/year to 60 MMBF/year. The amount of timber harvested in period 1 is no longer at its limit. As a result of the decrease in timber harvested, other activities and outputs associated with the timber element (Table B-83) dropped slightly. There was an increase in semi-primitive non-motorized and motorized RVD's and a decrease in roaded natural RVD's. This was a direct result of the change in management prescription allocation.

Constraint set 5 constrains acres of herbicide use to zero. The effect of this constraint on the allocation was an increase of 4,000 acres allocated to timber management prescriptions from management prescription 6.1. There was a $20 million decrease in PNV. The benefit/cost ratio remained at 7.9. Table B-82 indicates a 12 percent ($20 million) decrease in discounted benefits in the timber element. The discounted costs in the timber element decrease by $3 million or 8 percent. Discounted benefits and costs in other elements vary only slightly or not at all. Even though more acres were allocated to management prescriptions that harvest timber, LTSY decreases by 3 MMBF/year to 57 MMBF/year after adding constraint set 5. Hardwood sawtimber volumes in constraint set 5, except in decade 2, are less than in constraint set 4

(Table B-83). In decade 1, hardwood sawtimber production decreased by 15 percent. The most significant change is acres of herbicide in period decade 1, going from 23,000 acres at a cost of $789,000 to zero acres at a cost of $0. There are only slight variations in RVD's and WFUD's between constraint sets 4 and 5.

In summarizing the effects on Alternative B of the addition of the constraint sets, it is obvious both constraint sets 2, 3, and 5 were very influential in the alternative. The addition of constraint set 2 had the largest effects in terms of prescription allocation and activites and outputs. Constraint set 3 caused the largest drop in PNV. Constraint set 5 did not have a large effect on the allocation but did reduce PNV by $20 million and also reduced the acres of herbicide application to zero.

The effects of the addition of Wilderness (constraint set 4) did not have a significant influence on the Alternative. Of interest, the benefit/cost ratio increased or remained the same as constraint sets were added. The reason was because the percent reduction in discounted cost as constraint sets were added was greater than the percent reduction in discounted benefits.

TABLE B-80: MANAGEMENT PRESCRIPTION ASSIGNMENTS FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

Management Prescription		Total M Acres Assigned				
		CS1	CS2	CS3	CS4	CS5
		Max PNV BM	Timber	Rec/Wldlf	Wilder/NRA	Pub Rev
Aspen, Grouse	1	0	0	4	4	2
Uneven-aged, Non-game	2	62	16	17	15	20
Even-aged, Turkey, Deer	3	388	263	267	240	239
Even-aged, Softwood	4	19	0	0	0	0
Wilderness	5	0	0	0	9	9
Recreation, Wildlife	6.1	29	218	200	216	213
Even-aged 10 yr. SPNM 30 yr.	6.2	1	1	1	1	2
Wetland Wildlife	6.3	0	0	0	0	0
Long Rotation Primitive	6.5	0	0	0	0	0
Developed Recreation	7	0	0	0	0	0
Special Areas	8	0	0	0	0	0
Minimum Level	9.1	6	6	15	18	18

TABLE B-81 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

	CONSTRAINT SETS (CS)				
	CS1	CS2	CS3	CS4	CS5
ECONOMIC INDICATORS*	Max PNV BM	Timber	Rec/Wldlf	Wild./NRA	Pub.Rev
PRESENT NET VALUE (MM$)	444	400	324	316	296
CHANGE PNV FROM MAX PNV WITH MMR	-44	-76	- 8	-20	
BENEFIT/COST RATIO	5.3	6.8	7.4	7.9	7.9

*Discount rate 4%.

TABLE B-82 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE B BY ELEMENT

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilder/NRA	CS5 Pub.Rev
DISCOUNTED BENEFITS (MM$)					
Element					
Recreation	157	209	134	139	137
Wilderness	0	0	0	4	4
Wildlife	22	40	22	25	24
Timber	359	213	215	192	172
OGM	1	1	1	1	1
Support	1	1	1	1	1
TOTALS	539	464	372	362	339
DISCOUNTED COSTS (MM$)					
Element					
Recreation	8	6	3	3	3
Wilderness	0	0	0	1	1
Wildlife	17	18	1	1	1
Timber	71	39	40	36	33
OGM	2	2	2	2	2
Support	3	3	4	3	3
TOTALS	101	68	50	46	43

*Discount Rate 4%

Constraints Within Alternatives

TABLE B-83 KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
TIMBER						
LTSY (MBF/Year)	119		66		67	
Timber Volume (MBF/Decade)						
Hardwood Sawtimber						
Decade 1	492	64320	298	46889	298	47868
2	678	93272	333	58569	330	57090
3	715	149055	392	70316	389	71132
4	780	164470	416	86192	415	87203
5	891	214730	440	91492	439	91574
10	510	72898	358	71616	362	74394
15	566	87097	349	62847	356	66772
Softwood Sawtimber						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
10	1	19	0	0	0	0
15	98	2782	0	0	0	0
Hardwood Pulpwood						
Decade 1	700	0	362	0	362	0
2	514	0	327	0	330	0
3	477	0	268	0	271	0
4	410	0	244	0	245	0
5	297	0	220	0	221	0
10	675	0	302	0	298	0
15	507	0	311	0	304	0
Softwood Pulpwood						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	2	13	0	0	0	0
5	4	29	0	0	0	0
10	6	45	0	0	0	0
15	21	169	0	0	0	0

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS) CS4 Wilder./NRA M Units	M$	CS5 Public Review M Units	M$
TIMBER				
LTSY (MBF/Year)	60		57	
Timber Volume (MBF/Decade)				
Hardwood Sawtimber				
Decade 1	265	42985	230	35198
2	288	50113	311	41391
3	343	64137	326	61880
4	370	77609	351	73137
5	392	82144	373	81319
10	323	66344	272	44896
15	318	59750	269	45691
Softwood Sawtimber				
Decade 1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
10	0	0	0	0
15	0	0	0	0
Hardwood Pulpwood				
Decade 1	330	0	337	0
2	308	0	256	0
3	253	0	241	0
4	225	0	216	0
5	204	0	194	0
10	273	0	295	0
15	278	0	298	0
Softwood Pulpwood				
Decade 1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	2	13	0	0
5	4	29	0	0
10	6	45	0	0
15	21	169	0	0

Constraints Within Alternatives

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
TIMBER (con't)						
Total Timber Volume						
Decade 1	1192	64320	660	46889	660	47868
2	1192	93272	660	58569	660	57090
3	1192	149055	660	70316	660	71132
4	1192	164483	660	86192	660	87203
5	1192	214759	660	91492	660	91574
10	1192	72962	660	71616	660	74394
15	1192	90048	660	62847	660	66772
Final Harvest (acres)						
Decade 1	26		36		37	
2	54		35		35	
3	35		27		27	
4	54		28		28	
5	50		23		23	
10	43		27		27	
15	36		27		27	
Thinnings (acres)						
Decade 1	106		3		1	
2	0		0		0	
3	84		1		0	
4	0		0		0	
5	1		1		0	
10	48		5		5	
15	40		0		1	
Selection (acres)						
Decade 1	40		16		17	
2	22		0		0	
3	40		16		17	
4	21		0		0	
5	40		16		17	
10	21		0		0	
15	40		16		17	

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT		CONSTRAINT SETS (CS) CS4 Wilder./NRA M Units	M$	CS5 Public Review M Units	M$
TIMBER (con't)					
Total Timber Volume					
Decade	1	596	42985	567	35198
	2	596	50113	567	41491
	3	596	64137	567	61880
	4	596	77609	567	73137
	5	596	82144	567	81319
	10	596	66344	567	44896
	15	596	59750	567	45691
Final Harvest (acres)					
Decade	1	33		28	
	2	31		26	
	3	24		20	
	4	25		22	
	5	21		21	
	10	24		25	
	15	24		24	
Thinnings (acres)					
Decade	1	1		5	
	2	0		13	
	3	0		10	
	4	0		15	
	5	0		12	
	10	4		11	
	15	0		0	
Selection (acres)					
Decade	1	14		18	
	2	0		0	
	3	14		18	
	4	0		0	
	5	14		18	
	10	0		0	
	15	14		18	

Constraints Within Alternatives

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS) CS1 Max PNV BM M Units	CS1 Max PNV BM M$	CS2 Timber M Units	CS2 Timber M$	CS3 Rec/Wldlf M Units	CS3 Rec/Wldlf M$
TIMBER (con't)						
Herbicide (acres)						
Decade 1	30	1044	25	875	26	890
2	36	1264	18	616	17	606
3	22	790	15	522	15	513
4	31	1057	14	488	14	487
5	34	1159	13	450	13	460
10	25	869	14	483	13	461
15	22	779	15	520	15	521
RECREATION/WILDLIFE						
SPNM WO 33 (RVD/Decade)						
Decade 1	0	0	1	5	1	5
2	0	0	1	5	1	5
3	0	0	1	10	1	10
4	0	0	1	10	1	10
5	0	0	1	5	1	5
10	0	0	1	5	1	5
15	0	0	1	10	1	10
SPM WO5 (RVD/Decade)						
Decade 1	898	6994	6560	51106	4423	34453
2	920	7165	6725	52391	4423	34453
3	942	7336	6890	53676	4423	34453
4	970	7558	7062	55012	4438	34572
5	980	7644	7144	55658	4438	34572
10	980	7644	7144	55658	4438	34572
15	980	7644	7144	55658	4438	34572
RN WO7 (RVD/Decade)						
Decade 1	8632	46614	4669	25210	3524	19030
2	9617	51929	5117	27634	3459	18676
3	10601	57245	5566	30057	3393	18323
4	11651	62916	6080	32834	3393	18323
5	12176	65751	6337	34222	3393	18323
10	12130	65502	6292	33975	3347	18076
15	12130	65502	6292	33975	3347	18076

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS) CS4 Wilder./NRA M Units	CS4 Wilder./NRA M$	CS5 Public Review M Units	CS5 Public Review M$
TIMBER (con't)				
Herbicide (acres)				
Decade 1	23	789	0	0
2	15	535	0	0
3	13	458	0	0
4	13	434	0	0
5	12	412	0	0
10	12	411	0	0
15	13	464	0	0
RECREATION/WILDLIFE				
SPNM WO 33 (RVD/Decade)				
Decade 1	106	982	121	1125
2	168	1562	183	1704
3	194	1803	225	2095
4	219	2038	251	2330
5	233	2151	248	2293
10	233	2151	248	2293
15	233	2151	264	2448
SPM WO5 (RVD/Decade)				
Decade 1	4870	37940	4734	36881
2	4870	37940	4734	36881
3	4870	37940	4734	36881
4	4885	38053	4749	36994
5	4885	38053	4749	36994
10	4885	38053	4749	36994
15	4885	38053	4749	36994
RN WO7 (RVD/Decade)				
Decade 1	3176	17150	3200	17282
2	3110	16797	3134	16924
3	3045	16444	3068	16565
4	3045	16444	3068	16565
5	3045	16444	3068	16565
10	2999	16196	3021	16314
15	2999	16196	3021	16314

TABLE B-83 (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
RECREATION (con't)						
Big-Game (WFUD/Decade)						
Decade 1	1635	36400	1417	31548	1324	29470
2	1944	43267	1699	37830	1400	31160
3	2007	44680	1747	38892	1307	29089
4	1900	42299	1723	38357	1224	27254
5	1847	41123	1752	39003	1225	27275
10	1835	40853	1755	39073	1226	27296
15	1817	40447	1742	38781	1218	27115

TABLE B-83 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE B BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS) CS4 Wilder./NRA M Units	M$	CS5 Public Review M Units	M$
RECREATION (con't)				
Big-Game (WFUD/Decade)				
Decade 1	1274	28354	1285	28609
2	1350	30038	1322	29417
3	1269	28251	1252	27855
4	1199	26708	1210	26919
5	1203	26777	1212	26983
10	1103	26997	1194	26593
15	1199	26685	1162	25875

ALTERNATIVE C: Alternative C emphasizes the production of goods and services to maximize benefits which produce monetary returns. The max PNV benchmark is reflected in constraint set 1 and constraint set 2 addresses the timber problem statement. The objective is to manage timber crops for the highest value hardwood sawtimber species yielding the highest discounted returns. Constraint set 2 is made up of only 1 constraint. The constraint is an NDY requirement on hardwood sawtimber. The result of applying this constraint was a reduction of 6 percent in PNV of $26 million. The benefit/cost ratio went from 5.3 to 5.8. By element the discounted benefits and costs decreased for timber. There was an increase in discounted benefits of $9 million in the recreation element and $6 million in the wildlife element. The NDY of hardwood sawtimber is binding in every period. The reduction in LTSY between constraint sets 1 and 2 was 14.3 percent. This represents a difference of 17 MMBF per year.

The major differences in the timber element as a result of requiring NDY of hardwood sawtimber are the intensities of management prescription 3 chosen. The final harvest acres (Table B-87) goes from 26,000 acres in decade 1 prior to the addition of constraint set 2, to 60,000 acres after adding the constraint set. There were 106,000 acres of thinnings in constraint 1, this was reduced to 3,000 acres in constraint 2. This indicates that less intensive even-aged management is being brought into solution. The reason being the outputs from thinnings contain a larger proportion of hardwood pulpwood than final harvest cuts. All precommercial thinning intensities for all analysis areas, and the thinning intensities for Allegheny hardwoods, age 31-70 years, high-stocking analysis areas (which represents 135,000 acres) have a higher PNV than the final harvest intensities. Therefore, when NDY of total volume was the only constraint, the higher PNV precommercial thinning and thinning intensities were brought into solution. However, when the NDY of hardwood sawtimber constraint was added, the final harvest intensities were selected over the thinning intensities because they contained a larger proportion of the hardwood sawtimber, even though the PNV was higher for the thinnings.

Constraint set 3 addresses the recreation and wildlife problem statement. There are three constraints in this set. The purpose of these constraints is to keep new dispersed recreation development to a minimum and to invest in wildlife improvements only through timber management activities. The first constraint is to allow no medium or high recreation and wildlife intensities to come into solution. The second constraint allocates the 782 acres of Buzzard Swamp to management prescription 9.1. Buzzard Swamp is actually managed according to prescription 6.3. We added the additional costs outside of FORPLAN.

The final constraint in this set is to constrain 70 percent or 6,086 acres of the Allegheny Reservoir Face to a management prescription other than even-aged management. The application of these constraints results in meeting the objectives set forth in the recreation and wildlife portion of this alternative.

Table B-85 reveals that PNV dropped 16 percent or $65 million as a result of adding constraint 3. The benefit/cost ratio rose from 5.8 to 6.2. The recreation and wildlife elements showed large decreases in both discounted benefits and costs (Table B-86). This was expected as a result of allowing no medium or high recreation and wildlife intensities into solution. The timber element showed a $12 million increase in discounted benefits and $3 million increase in discounted costs.

The allocation of management goals (Table B-84) indicates a reduction of 13,000 acres in the uneven-aged management prescription and 23,000 acre decrease in management prescription 6.1, the prescription which allows cutting only for recreation and wildlife purposes. Management prescription 3 (even-aged management) was the prescription receiving the largest increase going from 389,000 acres prior to the addition of constraint set 3 to 426,000 acres after, an increase of 37,000 acres. The result of this shift is a slight increase in timber yields between constraint sets 2 and 3. LTSY increases from 102 MMBF/year to 108 MMBF/year. The reason for this shift of more acres into 3 is due to the fact that with low recreation and wildlife intensities, the reduction in RVD's and WFUD's causes the marginal timber producing areas to be allocated to

3. At high recreation and wildlife intensities, these marginal timber producing AA's are more productive to manage under prescriptions other than 3.

The wilderness problem statement is addressed in constraint set 4. In this alternative, Hickory Creek and the Allegheny River Islands are allocated to the wilderness management prescription (5). The Allegheny NRA was constrained to management prescription 6.1. These constraints resulted in a reduction of 46,000 acres in management prescription 3. This was offset by gains in management prescriptions 2, 4, 5, 6.2, 6.1, and 9.1. Exact acreage gains can be seen in Table B-84. PNV decreases by 5 percent or $16 million after adding constraint set 4. The benefit/cost ratio declines from 6.2 to 6.0. Total discounted benefits decrease by $15 million. This decreases came completely out of the timber element since benefits in all other elements increased or remained the same between constraint set 3 and 4. Discounted costs went from $69 million to $68 million after the addition of the constraint set. Again, the reduction in discounted cost occurred in the timber element. In terms of the constraint sets effects on activities and outputs (Table B-87), timber related activities decreased, LTSY went from 108 MMBF/year to 100 MMBF/year and hardwood sawtimber volume declined by 56 MMBF/decade. There was a shift in recreation for roaded natural to the semi-primitive ROS class. There was a small decline in big-game WFUD's produced in all decades.

TABLE B-84: MANAGEMENT PRESCRIPTION ASSIGNMENTS FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

Management Prescription		Total M Acres Assigned CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilder./NRA
Aspen, Grouse	1	0	0	0	0
Uneven-aged, Non-game	2	62	22	9	11
Even-aged, Turkey, Deer	3	388	389	426	380
Even-aged, Softwood	4	19	10	11	17
Wilderness	5	0	0	0	9
Recreation, Wildlife	6.1	29	72	49	69
Even-aged 10 yr. SPNM 30 yr.	6.2	1	5	1	6
Wetland Wildlife	6.3	0	0	0	0
Long Rotation Primitive	6.5	0	0	0	0
Developed Recreation	7	0	0	0	0
Special Areas	8	0	0	0	0
Minimum Level	9	6	6	7	11

TABLE B-85: ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilder./NRA
PRESENT NET VALUE (MM$)	444	418	353	337
CHANGE PNV FROM MAX PNV WITH MMR	-26	-65	-16	
BENEFIT/COST RATIO	5.3	5.8	6.2	6.0

*Discount rate 4%.

TABLE B-86 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE C BY ELEMENT

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wilder./NRA
DISCOUNTED BENEFITS (MM$)				
Element				
Recreation	157	166	95	99
Wilderness	0	0	0	4
Wildlife	22	28	5	9
Timber	359	306	318	291
OGM	1	1	1	1
Support	1	1	1	1
TOTALS	539	501	420	405
DISCOUNTED COSTS (MM$)				
Element				
Recreation	8	7	4	4
Wilderness	0	0	0	1
Wildlife	17	19	0	0
Timber	71	57	60	58
OGM	2	2	2	2
Support	3	3	3	3
TOTALS	101	87	69	68

*Discount Rate 4%

TABLE B-87: KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
TIMBER								
LTSY (MBF/Year)	119		102		108		100	
Timber Volume (MBF/Decade)								
Hardwood Sawtimber								
Decade 1	492	64320	558	68207	575	71250	519	66705
2	678	93272	558	90293	575	95430	519	89756
3	715	149055	558	110524	575	112714	519	100690
4	780	164470	558	105781	575	101861	519	87683
5	891	214730	558	109039	575	113001	519	105731
10	510	72898	558	101481	575	89017	519	86740
15	566	87097	558	104319	575	90884	519	99451
Softwood Sawtimber								
Decade 1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
10	1	19	23	992	108	4599	90	3834
15	98	2782	100	2591	89	2136	143	3728
Hardwood Pulpwood								
Decade 1	700	0	458	0	491	0	480	0
2	514	0	458	0	491	0	480	0
3	477	0	458	0	491	0	480	0
4	410	0	435	0	464	0	439	0
5	297	0	410	0	435	0	394	0
10	675	0	432	0	369	0	379	0
15	507	0	340	0	373	0	305	0
Softwood Pulpwood								
Decade 1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	2	13	23	186	27	215	41	329
5	4	29	48	391	56	452	86	694
10	6	45	3	24	14	109	11	92
15	21	169	18	147	28	229	32	257

TABLE B-87 (CON'T): KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wildlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Total Timber Volume								
Decade 1	1192	64320	1016	68207	1066	71250	999	66705
2	1192	93272	1016	90293	1066	95430	999	89756
3	1192	149055	1016	110524	1066	112714	999	100690
4	1192	164483	1016	105967	1066	102076	999	88012
5	1192	214759	1016	109430	1066	113453	999	106425
10	1192	72962	1016	102497	1066	93725	999	90666
15	1192	90048	1016	107057	1066	93249	999	103436
Final Harvest (acres)								
Decade 1	26		60		64		66	
2	54		53		56		53	
3	35		45		45		40	
4	54		38		43		42	
5	50		41		42		35	
10	43		39		40		38	
15	36		40		40		37	
Thinnings (acres)								
Decade 1	106		3		3		3	
2	0		0		0		0	
3	84		15		24		37	
4	0		3		11		4	
5	1		19		27		36	
10	48		7		11		7	
15	40		6		15		7	
Selection (acres)								
Decade 1	40		2		3		2	
2	22		0		1		0	
3	40		2		6		6	
4	21		19		2		5	
5	40		2		6		6	
10	21		19		2		5	
15	40		2		6		6	

TABLE B-87 (CON'T): KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Herbicide (acres)								
Decade 1	30	1044	27	935	28	995	27	932
2	36	1264	27	924	28	978	27	923
3	22	790	23	807	24	842	22	751
4	31	1057	28	964	22	783	23	800
5	34	1159	21	723	22	750	18	631
10	25	869	22	762	20	706	20	684
15	22	779	22	768	22	779	20	698
RECREATION/WILDLIFE								
SPNM W03 (RVD/Decade)								
Decade 1	0	0	50	464	7	63	143	1322
2	0	0	58	535	7	63	198	1502
3	0	0	108	1000	14	130	259	2407
4	0	0	112	1039	14	130	277	2579
5	0	0	73	633	7	63	245	2268
10	0	0	73	633	7	63	245	2268
15	0	0	114	1059	14	130	287	2665
SPM W05 (RVD/Decade)								
Decade 1	898	6994	2228	17355	1127	8777	1519	11831
2	920	7165	2282	17776	1127	8777	1519	11831
3	942	7336	2336	18197	1127	8777	1519	11831
4	970	7558	2396	18668	1134	8834	1526	11887
5	980	7644	2423	18879	1134	8834	1526	11887
10	980	7644	2423	18879	1134	8834	1526	11887
15	980	7644	2423	18879	1134	8834	1526	11887
RN W07 (RVD/Decade)								
Decade 1	8632	46614	7415	40043	5427	29306	5015	27082
2	9617	51929	8200	44282	5362	28953	4950	26729
3	10601	57245	8985	48521	5296	28600	4884	26376
4	11651	62916	9836	53113	5296	28600	4884	26376
5	12176	65751	10261	55409	5296	28600	4884	26376
10	12130	65502	10215	55161	5251	28353	4839	26128
15	12130	65502	10215	55161	5251	28353	4839	26128

TABLE B-87 (CON'T): KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE C BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wilderness/NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Big-Game (WFUD/Decade)								
Decade 1	1635	36400	1598	35564	1544	34379	1462	32549
2	1944	43267	1967	43781	1639	36389	1560	34713
3	2007	44680	1997	44453	1501	33415	1429	31806
4	1900	42299	1899	42279	1385	30834	1314	29256
5	1847	41123	1882	41895	1374	30580	1313	29226
10	1835	40853	1920	42732	1382	30757	1329	29597
15	1817	40447	1876	41755	1358	30224	1310	29154

ALTERNATIVE D: The purpose of Alternative D is to emphasize increases in the production of both market and non-market goods and services over current levels. The first constraint set contains a set of common and structural constraints common to all alternatives. This set of constraints also represents the constraints used in the MAX PNV benchmarks. Constraint set 2 addressed the timber problem statement. Final harvest acres will be increased. Timber type conversion is allowed on the most productive sites. The actual constraints in this constraint set are: 1) a minimum of 420 MMBF of hardwood sawtimber in periods 1 to 5, 2) final harvest a minimum of 30,000 acres in periods 1 and 2, and 3) 0 acres of low-site oak analysis areas allocated to a conversion prescription. The application of this constraint set reduces PNV by $2 million or 0.5 percent. The benefit/cost ratio increases from 5.3 to 5.4. While the final harvest constraint is binding in period 1, the overall effect of this constraint set in terms of total PNV is small.

Examination of Table B-90 indicates a slight increase in discounted benefits in both the wildlife and timber elements after the addition of constraint set 2 in Alternative D. These increases are $2 million and $1 million, respectively. A decrease of $7 million occurred in the discounted benefits associated with the recreation element. Overall discounted benefits were reduced by $3 million as a result of this constraint set. The effects on discounted costs resulted in an increase of $3 million in the wildlife element. The recreation element had a $2 million decrease and the timber element showed a $3 million decrease. Total discounted cost dropped by $1 million.

While the change in discounted costs and benefits as a result of adding constraint set 2 were small, there was a change in the management prescriptions allocated. The most significant change is an increase of 66,000 acres being allocated to prescription 3 and a decrease of 44,000 and 19,000 in prescriptions 2 and 4, respectively. This change in allocation is a result of not allowing low site oak to be converted to conifer, maintaining existing savannahs, and increasing final harvest acres on the remaining areas. Even though more acres are allocated to even-aged management (management prescription 3), the LTSY after adding constraint set 2

is decreased by 5 MMBF/year. Hardwood sawtimber volume in period 1 is higher after the constraint set is added, going from 492 MMBF/period to 507 MMBF/period.

Total timber volume, however, is decreased by 53 MMBF in the first period. The increase in hardwood sawtimber results from the need to final harvest 30,000 acres in period 1. The ratio of sawtimber to pulpwood is higher with final harvests than with thinnings. By increasing the final harvests in period 1, both sawtimber volume and total volume are reduced in the remaining periods.

The effects of this constraint set on RVD's was not very significant. The largest percent decrease in RVD's occurred in the semi-primitive motorized ROS class which decreased by 15 percent after the addition of the constraint. This was a result of the 16 percent in decrease in acres allocated to management prescription 6.1. There was a slight increase in the semi-primitive non-motorized RVD's due to a small increase in the acres allocated to management prescription 6.2. Because of the increased acres allocated to even-aged management, the number of big-game WFUD's increased slightly (6 percent) after adding constraint set 2.

The recreation and wildlife problem statement is addressed by constraint set 3. The recreation and wildlife objectives of this alternative are: 1) manage at least 15 percent of the forest to provide a semi-primitive, dispersed recreation experience, and 2) emphasize a moderate increase of hunting opportunities in areas managed to provide timber outputs. The constraints used to meet these objectives were: 1) assign 25,281 acres around Allegheny Reservoir including Tracy Ridge and Cornplanter to management prescription 6.1 high recreation/ wildlife intensity; 2) assign 57,288 acres which includes Hickory Creek, Allegheny Front, Minister Valley, and Clarion River areas to management prescriptions 5, 6.1, or 9.1; 3) constrain major river corridors to management prescription 6.1; 4) constrain low and high recreation/wildlife intensities to 0 acres on all timber management prescriptions; and 5) Buzzard Swamp to management prescription 9.1.

The application of this constraint set reduced the PNV of Alternative D by $36 million. The benefit/cost ratio increased from 5.4 to 6.4. The increase in the B/C ratio was a result of a 26 percent decrease in discounted costs and only 11 percent reduction in

discounted benefit. The only element to show an increase in discounted benefits was the recreation element which increased $3 million, from $150 million to $153 million. As indicated in Table B-90, the discounted benefits in the wildlife and timber elements decreased by $2 million and $59 million, respectively, as a result of constraint set 3. Total discounted benefits decreased by $58 million.

Table B-90 also displays the effects on discounted costs of adding constraints to Alternative D. The addition of constraint set 3 decreases discounted costs in the recreation, wildlife, and timber elements. Discounted costs on the recreation element went from $7 million to $6 million, in the wildlife element for $20 million to $9 million, and in the timber element from $68 million to $54 million. Total discounted costs decreased by $26 million.

The most important point of this table is even though the total PNV decreases as a result of adding constraint set 3, the PNV of the recreation and wildlife elements actually increase. This is a result of the objectives of the constraint set which was designed to increase the emphasis placed on recreation and wildlife.

Table B-88, which displays management prescription allocation by constraint set, shows that constraint set 3 causes a shift in management prescriptions from 2 and 3 to 6.1. Management prescription 2 decreases from 18,000 acres to less than 1,000 acres; prescription 3 decreases by 72,000 acres from 454,000 acres to 382,000 acres. Management prescription 6.1 increases by 87,000 from 25,000 to 112,000 acres. This change in prescription assignment is a direct result of the requirement to increase the amount of semi-primitive dispersed recreation available on the Forest.

The effects of constraint set 3 on specific activities and outputs is displayed in Table B-91. As a result of the increased emphasis on semi-primitive recreation activities and outputs, the timber element decreased. LTSY went from 114 MMBF/year to 93 MMBF/year. Total timber volumes as well as individual products decreased in every period. As expected, the addition of constraint set 3 caused a large increase in semi-primitive motorized RVD's and a significant decrease in the roaded natural ROS class. In the first

period, RVD's in the semi-primitive motorized ROS class increased 329 percent while roaded natural RVD's decreased by 33 percent in the same period. The three fold increase in semi-primitive ROS class RVD's was a direct result of the three fold increase in the allocation of management prescription of 6.1. The decrease in roaded natural RVD's was a result of two criteria imposed, the first was the reduction of acres allocated to prescription 3, the second was the fact that those acres allocated to 3 could only receive a medium recreation/wildlife intensity. The application of constraint set 3 actually reduced the big-game WFUD's produced by 13 percent in period 1. The reason for this is because the constraint requiring management prescription 3 to receive a medium intensity recreation/wildlife intensity will reduce the number of WFUD's from these areas. In addition, fewer acres going to 3 will reduce WFUD's produced because there will be less acres in the younger age classes where more WFUD's are generated.

Constraint set 4 in Alternative D requires Hickory Creek and the Allegheny River Islands be allocated to the Wilderness management prescription (5). The Allegheny NRA was constrained to management prescription 6.1. As a result of this constraint, the PNV is reduced from $406 million to $401 million. The benefit/cost ratio increased from 6.4 to 6.5. Discounted benefits decrease in the recreation element and timber element by $4 and $5 million, respectively. Increases occurred in the Wilderness element of $4 million. The wildlife element did not change. In terms of discounted costs, the recreation and timber element both decreased by $1 million, the wilderness element increased by $1 million, and again the wildlife element remained unchanged.

In terms of the allocation by management prescription for constraint set 4, management prescriptions 6.1 and 3 were reduced by 6,000 acres and 4,000 acres, respectively. Management prescription 5 increased by 10,000 acres. The change in allocation was a direct result of the constraint on Wilderness areas.

The effects of key activities and outputs as a result of this constraint are minimal. LTSY decreased by 1 MMBF/year. A small reduction occurred in the roaded natural and semi-primitive motorized RVD's, and a small

increase occurred in semi-primitive non-motorized RVD's. There were no significant changes in either timber activities or outputs as in big-game WFUD's.

Constraint set 5 in Alternative D was added after choosing a preferred alternative in the Draft EIS. Based on mapping and spatial feasibility testing, constraints on management prescription assignments were made to improve the spatial arrangement of prescriptions. The addition of constraint set 5 reduced PNV by $3 million to $398 million. The benefit/cost ratio increased to 6.7. The reason PNV decreased is because the absolute decrease in discounted benefits ($5 million) is greater than the absolute decrease in discounted costs ($3 million) when compared to the previous constraint set. The reason the benefit/cost ratio increased when constraint set 5 was added is because the percent decrease in discounted benefits (1 percent) is less than the percent decrease in discounted costs (4 percent). Discounted benefits in the recreation and wildlife elements increased by $15 million and $5 million, respectively. Discounted benefits decreased by $25 million in the timber element. Discounted costs decreased by $4 million in the timber element, increased by $1 million in the wildlife element, and remained unchanged in the recreation element.

Constraint set 5 caused increases of 5,000 acres in management prescription 2, 5,000 acres in management prescription 6.2, and 39,000 acres in management prescription 6.1. The only decrease in prescription allocation took place in prescription 3, which was reduced by 50,000 acres.

As a result of the shift in the assignment of management prescriptions, changes occurred in activities and outputs of all elements. LTSY was reduced by 8 MMBF/year with volume of all products harvested reduced. Because of the increase in acres assigned to uneven-aged management, there was an increase in the acres receiving selection harvest.

RVD's increased in the semi-primitive motorized and non-motorized ROS class and decreased in the roaded natural ROS class. The RVD's in the semi-primitive non-motorized ROS class increased by 256 percent. This increase is due to the increased acres in management prescription 6.2. This prescription has 30 years of

"quiet" periods when no timber harvesting is allowed and 10 years of timber harvesting. During the "quiet" period, semi-primitive RVD's are produced. There was a 37 percent increase in semi-primitive motorized ROS class due to the shift in prescription assignment from 3 to 6.1. This is the same reason for the 12 percent decrease in roaded natural RVD's.

Big-game WFUD's declined slightly (4 percent) as a result of the addition of constraint set 5. WFUD production is higher in young age class timber than old age timber. By reducing the acres in management prescription 3, WFUD's produced are reduced because less acres are in the young age classes. Some of the reduction in WFUD's due to less acres of young age class timber is offset by the switch from medium recreation/wildlife intensity, which is constrained in management 3, to high recreation/wildlife intensity assigned in management prescription 6.1. However, the shift from medium to high intensity did not generate enough WFUD's to offset the reduction of acres in the young age class.

The final constraint set in Alternative D was added after public review of the Draft EIS. It represents the changes made in Alternative D in response to public comments. A summary of the constraints added are 1) provide 7,000 acres of aspen/grouse management, 2) increase acres of management prescription 6.2 to 20,000 acres, 3) allow no oak conversion, 4) no more than 30,000 acres of final harvest in decade 1, and 5) provide 15,000 acres of old growth in even-aged management prescriptions.

The addition of constraint set 6 reduced PNV by $14 million to $384 million. The benefit/cost ratio decreased to 5.9. The decrease in PNV and benefit/cost ratio resulted from a decrease in discounted benefits and an increase in discounted costs after the addition of the constraint set. Discounted benefits decreased by 1 percent from $468 million to $462 million. Discounted benefits decreased by $8 million in the recreation element and $1 million in the wildlife element. The only element to increase in discounted benefits was timber with a $3 million increase. Discounted costs increased by 10 percent from $70 million to $78 million. The entire increase in discounted costs took place in the timber element.

Constraints Within Alternatives

Constraint set 6 caused increases of 7,000 acres in management prescription 1 and 15,000 acres in management prescription 6.2. A decrease of 1,000 acres in management prescription 3 and 21,000 acres in management prescription 6.1 also occurred.

As a result of the constraints added in constraint set 6, changes occurred in activities and outputs of all elements. LTSY increased by 5 million MMBF/year, however, hardwood sawtimber volume decreased in decade 1 from 420 MMBF to 347 MMBF. Pulpwood increased from 414 MMBF to 539 MMBF in decade 1. This result is directly related to the constraint which requires no oak conversion. In order to maintain total volume, harvest occurred in stands where the ratio of pulpwood to sawtimber was higher than in the oak stands, which was cut prior to adding the no conversion constraint. Also to offset the volume loss from not final harvesting the oak stands in decade 1, thinnings and selection cuts were increased in the first period.

The major shift in the recreation element was a doubling of the RVD's in the semi-primitive non-motorized ROS class. This was a result of the increase of 15,000 acres in management prescription 6.2. A reduction of 16 percent occurred in the semi-primitive motorized ROS class because of the reduction of acres in management prescription 6.1.

Big-game WFUD's increased slightly (2 percent) as a result of placing 7,000 acres in management prescription 1. WFUD production is higher on the acres managed intensively for grouse.

In summary, while all constraint sets had some effect on the development of alternative D, constraint set 3 seems to have the greatest significance. This constraint set addresses the recreation/wildlife problem statement. The other constraint set reduced PNV by $2 million to $5 million constraint set 3 reduced it by $36 million over constraint set 2. There was a significant shift from management prescription which harvest timber to management prescription 6.1 in constraint set 3. As a result, the RVD's by ROS class changed significantly. There was a 329 percent increase in semi-primitive motorized RVD's and a 33 percent reduction in the roaded natural ROS class.

TABLE B-88: MANAGEMENT PRESCRIPTION ASSIGNMENTS FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

Management Prescription	Total M Acres Assigned CS1 Max PNV	CS2 BM Timber	CS3 Rec/Wldlf	CS4 Wilder./NRA	CS5	CS6 Pub. Rev.
Aspen, Grouse - 1	0	0	0	0	0	7
Uneven-aged, Non-Game - 2	62	18	1	1	6	6
Even-aged, Turkey, Deer - 3	388	454	382	378	328	327
Even-aged, Softwood - 4	19	0	0	0	0	0
Wilderness - 5	0	0	0	10	10	10
Recreation, Wildlife - 6.1	29	25	112	106	145	124
Even-aged 10 yr. SPNM 30 yr. - 6.2	<1	<1	<1	<1	5	20
Wetland Wildlife - 6.3	0	0	0	0	0	0
Long Rotation Primitive - 6.5	0	0	0	0	0	0
Developed Recreation - 7	0	0	0	0	0	0
Special Areas - 8	0	0	0	0	0	0
Minimum Level - 9.1	6	7	9	9	9	9

TABLE B-89 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

	CONSTRAINT SETS (CS)					
	CS1	CS2	CS3	CS4	CS5	CS6
ECONOMIC INDICATORS*	Max PNV BM	Timber	Rec/Wldlf	Wild./NRA		Pub. Rev.
PRESENT NET VALUE (MM$)	444	442	406	401	398	384
CHANGE PNV FROM MAX PNV WITH MMR		- 2	-36	- 5	- 3	-14
BENEFIT/COST RATIO	5.3	5.4	6.4	6.5	6.7	5.9

*Discount rate 4%.

TABLE B-90 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE D BY ELEMENT

	CONSTRAINT SETS (CS)					
	CS1	CS2	CS3	CS4	CS5	CS6
ECONOMIC INDICATORS*	Max PNV BM	Timber	Rec/Wldlf	Wild./NRA		Pub. Rev.
DISCOUNTED BENEFITS (MM$)						
Element						
Recreation	157	150	153	149	164	156
Wilderness	0	0	0	4	4	4
Wildlife	22	24	22	22	27	26
Timber	359	360	301	296	271	274
OGM	1	1	1	1	1	1
Support	1	1	1	1	1	1
TOTALS	539	536	478	473	468	462
DISCOUNTED COSTS (MM$)						
Element						
Recreation	8	7	6	5	5	5
Wilderness	0	0	0	1	1	1
Wildlife	17	20	9	9	10	10
Timber	71	68	54	53	49	57
OGM	2	2	2	2	2	2
Support	3	3	3	3	3	3
TOTALS	101	100	74	73	70	78

*Discount Rate 4%

TABLE B-91 KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
TIMBER						
LTSY (MBF/Year)	119		114		93	
Timber Volume (MBF/Decade)						
Hardwood Sawtimber						
Decade 1	492	64320	507	60784	421	53246
2	678	93272	639	98289	494	79893
3	715	149055	692	145714	585	130793
4	780	164470	750	162208	587	125470
5	891	214730	836	191687	630	141543
10	510	72898	490	88818	479	87387
15	566	87097	651	119492	549	113493
Softwood Sawtimber						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
10	1	19	0	0	0	0
15	98	2782	0	0	0	0
Hardwood Pulpwood						
Decade 1	700	0	637	0	514	0
2	514	0	492	0	425	0
3	477	0	451	0	359	0
4	410	0	395	0	348	0
5	297	0	300	0	290	0
10	675	0	657	0	457	0
15	507	0	489	0	387	0
Softwood Pulpwood						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	2	13	0	0	0	0
5	4	29	0	0	0	0
10	6	45	0	0	0	0
15	21	169	0	0	0	0

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS4 Wilder./NRA		CS5		CS6 Public Rev.	
	M Units	M$	M Units	M$	M Units	M$
TIMBER						
LTSY (MBF/Year)	92		84		89	
Timber Volume (MBF/Decade)						
Hardwood Sawtimber						
Decade 1	421	52850	420	51382	347	50677
2	478	79100	420	73230	426	56451
3	575	128260	508	109524	541	115692
4	579	123797	528	113469	555	121698
5	620	139110	567	128443	617	128325
10	465	86046	378	69284	486	90144
15	534	108687	467	96461	491	93272
Softwood Sawtimber						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
10	1	19	0	0	0	0
15	98	2782	0	0	0	0
Hardwood Pulpwood						
Decade 1	700	0	637	0	539	0
2	514	0	492	0	460	0
3	477	0	451	0	345	0
4	410	0	395	0	331	0
5	297	0	300	0	269	0
10	675	0	657	0	400	0
15	507	0	489	0	395	0
Softwood Pulpwood						
Decade 1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	2	13	0	0	0	0
5	4	29	0	0	0	0
10	6	45	0	0	0	0
15	21	169	0	0	0	0

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
Total Timber Volume						
Decade 1	1192	64320	1139	60784	931	53246
2	1192	93272	1139	98289	931	79893
3	1192	149055	1139	145714	931	130793
4	1192	164483	1139	162208	931	125470
5	1192	214759	1139	191687	931	141543
10	1192	72962	1139	88818	931	87387
15	1192	90048	1139	119492	931	113493
Final Harvest (acres)						
Decade 1	26		30		30	
2	54		58		49	
3	35		37		48	
4	54		60		43	
5	50		54		39	
10	43		44		53	
15	36		45		43	
Thinnings (acres)						
Decade 1	106		112		87	
2	0		0		0	
3	84		92		31	
4	0		0		0	
5	1		1		0	
10	48		65		9	
15	40		29		16	
Selection (acres)						
Decade 1	40		14		1	
2	22		3		0	
3	40		14		1	
4	21		3		0	
5	40		14		1	
10	21		3		0	
15	40		15		1	

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS4 Wilder./NRA		CS5		CS6 Public Rev.	
	M Units	M$	M Units	M$	M Units	M$
Total Timber Volume						
Decade 1	917	52850	834	51382	886	50677
2	917	79100	834	73230	886	56451
3	917	128260	834	109524	886	115692
4	917	123797	834	113469	886	121698
5	917	139110	834	128443	886	128325
10	917	86046	834	69284	886	90144
15	917	108687	834	96461	886	93272
Final Harvest (acres)						
Decade 1	83		30		30	
2	48		44		31	
3	48		41		44	
4	42		38		28	
5	39		34		37	
10	52		46		38	
15	43		40		40	
Thinnings (acres)						
Decade 1	83		60		87	
2	0		0		71	
3	30		22		18	
4	0		0		70	
5	0		2		19	
10	13		6		42	
15	13		7		1	
Selection (acres)						
Decade 1	1		3		7	
2	0		3		0	
3	1		3		7	
4	0		3		0	
5	1		3		7	
10	0		3		0	
15	1		3		7	

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
Herbicide (acres)						
Decade 1	30	1044	21	726	15	526
2	36	1264	30	1059	24	848
3	22	790	21	738	29	989
4	31	1057	33	1128	22	748
5	34	1159	33	1136	21	717
10	25	869	23	807	30	1040
15	22	779	25	864	24	820
RECREATION/WILDLIFE						
SPNM W03 (RVD/Decade)						
Decade 1	0	0	2	12	1	11
2	0	0	1	11	2	15
3	0	0	2	19	3	28
4	0	0	2	18	3	32
5	0	0	1	5	3	24
10	0	0	1	5	3	24
15	0	0	2	13	4	34
SPM W05 (RVD/Decade)						
Decade 1	898	6994	785	6112	3366	26219
2	920	7165	803	6260	3450	26874
3	942	7336	822	6408	3534	27528
4	970	7558	847	6596	3625	28239
5	980	7644	857	6674	3667	38566
10	980	7644	857	6674	3667	38566
15	980	7644	857	6674	3667	38566
RN W07 (RVD/Decade)						
Decade 1	8632	46614	8425	45496	5622	30359
2	9617	51929	9323	50346	5919	31964
3	10601	57245	10222	55197	6216	33568
4	11651	62916	11185	60400	6579	33525
5	12176	65751	11667	63002	6760	36504
10	12130	65502	11621	62755	6741	36257
15	12130	65502	11621	62755	6741	36257

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS4 Wilder./NRA		CS5		CS6 Public Rev.	
	M Units	M$	M Units	M$	M Units	M$
Herbicide (acres)						
Decade 1	15	526	16	557	18	612
2	24	841	23	810	16	564
3	28	969	23	821	26	904
4	21	737	19	672	14	478
5	20	704	18	627	20	700
10	29	1012	25	863	21	724
15	24	817	22	748	22	753
RECREATION/WILDLIFE						
SPNM WO3 (RVD/Decade)						
Decade 1	41	384	146	1357	296	2757
2	122	1133	206	1917	417	3870
3	203	1891	269	2580	658	6101
4	284	2640	290	2694	732	6816
5	324	3004	259	2403	605	5610
10	324	3004	259	2403	605	5610
15	325	3014	301	2792	771	7148
SPM WO5 (RVD/Decade)						
Decade 1	3180	24774	4369	33661	3678	28653
2	3180	24774	4479	34891	3723	29004
3	3180	24774	4589	35748	3768	29354
4	3187	24831	4706	36661	3820	29761
5	3187	24831	4761	37090	3842	30201
10	3187	24831	4761	37090	3842	30201
15	3187	24831	4761	37090	3842	30201
RN WO7 (RVD/Decade)						
Decade 1	5549	29964	4869	26294	4994	26968
2	5841	31541	5115	27623	5246	28331
3	6133	33118	5362	28953	5499	29694
4	6490	35048	5673	30635	5817	31409
5	6669	36013	5829	31477	5975	32267
10	6623	35766	5783	31230	5930	32020
15	6623	35766	5783	31230	5930	32020

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf	
	M Units	M$	M Units	M$	M Units	M$
Big-Game (WFUD/Decade)						
Decade 1	1635	36400	1738	38677	1513	33682
2	1944	43267	2090	46541	1660	36959
3	2007	44680	2195	48875	1738	38683
4	1900	42299	2081	46323	1744	38808
5	1847	41123	2055	45839	1694	37753
10	1835	40853	2015	44845	1711	38086
15	1817	40447	2029	45159	1727	38465

TABLE B-91 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)					
	CS4 Wilder./NRA		CS5		CS6 Public Review	
	M Units	M$	M Units	M$	M Units	M$
Big-Game (WFUD/Decade)						
Decade 1	1505	33523	1445	32168	1471	32753
2	1647	36651	1598	35577	1621	36069
3	1721	38306	1662	36990	1685	37515
4	1727	38434	1669	37150	1744	38817
5	1679	37363	1643	36573	1706	37964
10	1693	37682	1651	36743	1684	37500
15	1710	38063	1652	36781	1707	37999

ALTERNATIVE E: Alternative E emphasizes significant increases in the production of both priced and non-priced goods and services. Constraint set 1 is the max PNV benchmark and serves as the base in the incremental analysis. Constraint set 2 addresses the timber problem statement. The objectives of this alternative in terms of the timber problem statement are: 1) provide a natural-looking Forest recreation setting on approximately 25 percent of the Forest, 2) practice intensive timber management on the best sites, and 3) maintain the current level of sawtimber harvest volume. To meet these objectives four constraints were applied. The first was to allow no even-aged management on low-site oak and low CAP medium and high-stocking analysis areas. The second constraint was not to allow management prescription 3 or 6.2 on low-stocked analysis areas. The third constrained out the final harvest intensity in management prescription 3. The final constraint required a minimum of 250 MMBF of hardwood sawtimber in period 1.

A $15 million reduction in PNV occurred as a result of the addition of constraint set 2. The benefit/cost ratio decreased from 5.3 to 5.1. The reduction in the benefit/cost ratio was a result of an increase in discounted costs and a decrease in discounted benefits after the addition of the constraint set. In terms of discounted benefits, there was a $12 million increase in the recreation element. This was more than offset by a $24 million decrease in the timber element. Discounted benefits in the wildlife element increased by $1 million. Discounted costs in the timber element showed a $4 million increase. Several reasons exist for the decrease in PNV. The financial analysis indicates prescription 3 - "final harvest only" intensities have a higher PNV per acre than prescription 3 - "thinning" intensities with no precommercial thinnings. This is true in all cases except for the Allegheny Hardwood, age 31-70, high stocked analysis areas. Therefore, the constraint on final harvest intensity reduces the PNV of the Alternative. In addition, since the PNV's for management prescription 3 are higher than any other management prescription, the restrictions on even-aged management prescriptions and timber type conversion constraint also reduced PNV of the Alternative.

Because of the constraints applied, less acres are available for even-aged management. This results in acres being shifted from the even-aged management prescriptions of 3 and 4 to uneven-aged prescriptions (2) and prescriptions which do not harvest timber, like 6.1 (Table B-92). The effects of this allocation include a reduction in the LTSY between the two runs. Since the acres assigned management prescription 3 are more intensively managed, an increase in acres thinned occurs. Also, more acres of selection cutting are done because of the increased acres in management prescription 2.

The most significant effects of this constraint set on other elements was a 100 percent increase in the number of semi-primitive motorized RVD's produced. The increase can be directly related to the doubling of acres being allocated to management prescription 6.1. The increase in semi-primitive non-motorized RVD's was a result of the 17,000 acre increase in management prescription 6.2. Management prescription 6.2 came into solution in large amounts on a few analysis areas. On these analysis areas, the management prescription and intensity replaced by 6.2, was 3 final harvest. The reason is the semi-primitive non-motorized RVD's produced in 6.2 are more valuable than the roaded natural RVD's produced in 3. When the final harvest intensity was constrained out of solution, the contribution to PNV from 3 and 6.2 were about the same; but the higher valued RVD's made management prescription 6.2 more desirable overall.

The constraints in the third constraint set address the recreation and wildlife problem statement. The objectives are to provide approximately 35,000 acres of recreational opportunity in the non-motorized ROS classes. In addition, intensive management of both game and non-game wildlife species will occur in this alternative. The constraints applied are: 1) increase beginning final harvest to culmination of mean annual increment of dollars, 2) allow no even-aged management around the Allegheny Reservoir (approximately 8,695 acres), 3) emphasize non-motorized recreation in Minister Valley (1,967 acres) by applying management prescription 6.1, 4) apply high intensity recreation and wildlife on 180,000 acres, 5) intensively manage existing aspen acreage for grouse (9,664 acres), and 6) constrain the core area of Buzzard Swamp to 9.1.

Table B-93 indicates a drop of 12 percent or $50 million in the PNV as a result of adding constraint set 3. Benefit/cost ratio increases from 5.1 to 5.3, the same ratio as in the Max PNV run. In looking at Table B-94, the discounted benefits and costs by element, the most significant reduction occurs in the discounted benefits from the timber element, this decreases $97 million between the two runs. The discounted benefits increase $33 million in recreation. There are no significant changes in discounted costs, with the exception of an $11 million decrease in the timber element.

Table B-92 indicates that a major shift occured in management prescription allocation. Both management prescriptions 2 and 6.1 doubled in the number of acres allocated, while prescriptions 3 and 4 were cut in half. Management prescription 1.1 received the 10,000 acres which were constrained to that prescription. As expected by the prescription allocation, the activities and outputs associated with timber production showed several significant changes. LTSY went from 111 MMBF/year to 87 MMBF/year. Hardwood sawtimber was reduced by as much as 403 MMBF in period 2. The effects in sawtimber volume were greatest in the first five decades of the planning horizon. Because of the shift to uneven-aged management, the acres of selection cuts doubled.

This constraint set is responsible for directly removing 151,000 acres, or about 30 percent of the Forest, from the even-aged management prescription. The reason for the large shift in management prescription allocation is due to the increase in the minimum rotation age. By not allowing harvest prior to culmination of mean annual increment of dollars, the amount of acres available for final harvest was greatly reduced. The average age for beginning final harvests is 120 years. This means that only the analysis areas in the 111+ age class can be final harvested in periods 1 and 2. Because of harvest constraints placed in this age class in constraint set 1, only 1/3 of the total acres, or about 1,000 acres, can actually be harvested in periods 1 and 2. Because of this constraint which delays final harvests in prescription 3, the PNV of prescription 2 is more competitive with prescription 3. Therefore, the reduction in volume due to the lack of acres available for final harvest was partially offset by doubling the

acres allocated to uneven-aged management. The analysis areas being allocated to 2 were generally Allegheny and Northern hardwood in the 71 to 110 age classes. The younger age classes and the 111+ were allocated to 3. The reason is the analysis areas in the 71-110 age classes were capable of contributing volume under 2 in periods 1 and 2, when the volume is needed to sustain NDY.

The last constraint (#4) in this alternative addressed the Wilderness problem statement. In this set, as in all previous alternatives, the model was constrained to reflect the PA Wilderness Act legislation. Hickory Creek and the Allegheny River Islands were constrained to a wilderness management prescription and the NRA was constrained to management prescription 6.1. The effect on allocation was to decrease the timber management prescriptions of 2 and 3 by 11,000 and 8,000 acres, respectively. Increases occurred in the allocation of management prescription 5 (9,000 acre increase), 6.1 (7,000 acre increase), and 9.1 (3,000 acre increase). The addition of the wilderness constraint set in Alternative E decreased PNV by $6 million. Benefit/cost ratio remained unchanged at 5.3. The discounted benefits of recreation and timber were decreased $2 million and $11 million, respectively. An increase in discounted benefits of $4 million in wilderness and $2 million in wildlife resulted from adding this constraint set. A slight decrease in discounted costs occurred in the wildlife and timber elements. The discounted costs of the wilderness element increased by $1 million. The Effects on activities and outputs were small. As with all alternatives when this constraint set was added, timber activities and outputs decreased and recreation activities and outputs increased. LTSY decreased by 4 MMBF/year. There was a shift from roaded natural to semi-primitive ROS classes. The most significant change was the increase in semi-primitive non-motorized RVD's resulting from the acres constrained to management prescription 5.

TABLE B-92 MANAGEMENT PRESCRIPTION ASSIGNMENTS FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

Management Prescription		Total M Acres Assigned			
		CS1	CS2	CS3	CS4
		Max PNV BM	Timber	Rec/Wldlf	Wild./NRA
Aspen, Grouse	1	0	1	10	10
Uneven-aged, Non-game	2	62	94	186	175
Even-aged, Turkey, Deer	3	388	317	166	158
Even-aged, Softwood	4	19	13	7	7
Wilderness	5	0	0	0	9
Recreation, Wildlife	6.1	29	55	125	132
Even-aged 10 yr. SPNM 30 yr.	6.2	1	18	1	1
Wetland Wildlife	6.3	0	0	0	0
Long Rotation Primitive	6.5	0	0	0	0
Developed Recreation	7	0	0	0	0
Special Areas	8	0	0	0	0
Minimum Level	9.1	6	6	8	11

TABLE B-93 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wild./NRA
PRESENT NET VALUE (MM$)	444	429	379	373
CHANGE PNV FROM MAX PNV WITH MMR		-15	-50	- 6
BENEFIT/COST RATIO	5.3	5.1	5.3	5.3

*Discount rate 4%.

TABLE B-94 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE E BY ELEMENT

ECONOMIC INDICATORS*	CONSTRAINT SETS (CS) CS1 Max PNV BM	CS2 Timber	CS3 Rec/Wldlf	CS4 Wild./NRA
DISCOUNTED BENEFITS (MM$)				
Element				
Recreation	157	169	202	200
Wilderness	0	0	0	4
Wildlife	22	23	27	29
Timber	359	335	238	227
OGM	1	1	1	1
Support	1	1	1	1
TOTALS	539	528	469	462
DISCOUNTED COSTS (MM$)				
Element				
Recreation	8	8	8	8
Wilderness	0	0	0	1
Wildlife	17	15	12	11
Timber	71	75	64	62
OGM	2	2	2	2
Support	3	3	3	3
TOTALS	101	103	89	87

*Discount Rate 4%

TABLE B-95 KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wild./NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
TIMBER								
LTSY (MBF/Year)	119		111		87		83	
Timber Volume (MBF/Decade)								
Hardwood Sawtimber								
Decade 1	492	64320	361	52875	289	47813	272	45049
2	678	93272	660	70851	257	28569	241	27507
3	715	149055	661	137826	572	110289	543	104681
4	780	164470	777	166100	529	86407	481	82063
5	891	214730	816	195729	658	119008	624	113171
10	510	72898	593	75832	443	65188	426	66849
15	566	87097	662	134109	465	65365	441	62048
Softwood Sawtimber								
Decade 1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
10	1	19	1	7	0	0	0	0
15	98	2782	73	2092	16	212	15	198
Hardwood Pulpwood								
Decade 1	700	0	756	0	581	33	554	33
2	514	0	445	0	613	0	585	0
3	477	0	456	0	298	23	283	22
4	410	0	340	0	341	6	345	6
5	297	0	301	0	212	9	202	9
10	675	0	522	0	427	6	400	6
15	507	0	366	0	367	12	350	12
Softwood Pulpwood								
Decade 1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	2	13	0	0	0	0	0	0
5	4	29	0	0	0	0	0	0
10	6	45	1	14	0	0	0	0
15	21	169	16	147	22	178	20	161

Constraints Within Alternatives

TABLE B-95 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wild./NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Total Timber Volume								
Decade 1	1192	64320	1117	52875	870	47848	826	45082
2	1192	93272	1117	70851	870	25869	826	27507
3	1192	149055	1117	137826	870	110312	826	104703
4	1192	164483	1117	166100	870	86413	826	82069
5	1192	214759	1117	195729	870	119017	826	113180
10	1192	72962	1117	75853	870	65613	826	66855
15	1192	90048	1117	136348	870	65767	826	62407
Final Harvest (acres)								
Decade 1	26		4		4		4	
2	54		38		1		1	
3	35		14		5		5	
4	54		50		10		9	
5	50		36		11		11	
10	43		31		18		17	
15	36		33		10		9	
Thinnings (acres)								
Decade 1	106		159		38		35	
2	0		21		94		92	
3	84		167		35		33	
4	0		28		75		79	
5	1		36		6		6	
10	48		87		14		12	
15	40		49		45		45	
Selection (acres)								
Decade 1	40		50		113		108	
2	22		39		72		67	
3	40		50		113		108	
4	21		39		72		67	
5	40		50		113		108	
10	21		39		72		67	
15	40		50		114		108	

TABLE B-95 (CON'T) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wild./NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Herbicide (acres)								
Decade 1	30	1044	23	812	49	1685	46	1601
2	36	1264	35	1240	31	1097	29	1017
3	22	790	13	447	11	391	11	372
4	31	1057	34	1164	11	373	10	337
5	34	1159	26	893	15	534	15	506
10	25	869	22	770	13	450	12	436
15	22	779	24	845	14	501	14	472
RECREATION/WILDLIFE								
SPNM W03 (RVD/Decade)								
Decade 1	0	0	189	1750	16	150	122	1136
2	0	0	216	2008	19	179	184	1709
3	0	0	404	3752	36	331	220	2046
4	0	0	418	3880	38	350	243	2251
5	0	0	251	2330	24	225	239	2219
10	0	0	251	2330	24	225	239	2219
15	0	0	425	3944	39	359	253	2353
SPM W05 (RVD/Decade)								
Decade 1	898	6994	1685	13123	3799	29593	3972	30939
2	920	7165	1727	13450	3893	30325	4070	31702
3	942	7336	1769	13777	3987	31057	4168	32465
4	970	7558	1817	14154	4088	31846	4273	33285
5	980	7644	1838	14318	4135	32212	4322	33667
10	980	7644	1838	14318	4135	32212	4322	33667
15	980	7644	1838	14318	4135	32212	4327	33667
RN W07 (RVD/Decade)								
Decade 1	8632	46614	7906	42692	7556	40805	7187	38812
2	9617	51929	8831	47690	8518	45996	8091	43690
3	10601	57245	9757	52687	9479	51186	8994	48568
4	11651	62916	10748	58037	10506	56731	9963	53798
5	12176	65751	11243	60713	11019	59503	10447	56414
10	12130	65502	11197	60465	10973	59255	10401	56167
15	12130	65502	11197	60465	10973	59255	10401	56167

Constraints Within Alternatives

TABLE B-95 KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE E BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT	CONSTRAINT SETS (CS)							
	CS1 Max PNV BM		CS2 Timber		CS3 Rec/Wldlf		CS4 Wild./NRA	
	M Units	M$	M Units	M$	M Units	M$	M Units	M$
Big-Game (WFUD/Decade)								
Decade 1	1635	36400	1584	35260	1443	32133	1414	31502
2	1944	43267	1846	41094	1634	36386	1603	35662
3	2007	44680	1932	43017	1634	36382	1608	35790
4	1900	42299	1870	30621	1681	37413	1658	36913
5	1847	41123	1837	40646	1614	35923	1597	35551
10	1835	40853	1722	38328	1499	33366	1490	33159
15	1817	40447	1758	39145	1550	34502	1534	34132

E. Variations on the Preferred Alternative

1. Introduction

After the preferred alternative was selected, it was evaluated in terms of 1) its sensitivity to a first decade budget approximating 80 percent of the current budget, 2) high OGM demand scenario, and 3) its ability for growth to meet 90 percent of LTSY by 2030. Analyzing the effect of a reduced budget required an additional FORPLAN run.

2. Preferred Alternative, Reduced Budget

a. Purpose: To analyze the sensitivity of the preferred alternative to a first decade budget approximating 80 percent of the FY 1982 appropriation.

b. Objective: Evaluate impacts on economic indicators and key activity and outputs resulting from a budget lower than recent funding level.

c. Constraint Sets

- Include all constraints in Section VII.C. Alternative D.

- Budget Limit

  - Constraint: A budget constraint limiting the first decade total FORPLAN costs to a maximum of $24.24 million was imposed.
  - Rationale: FY 1982 budget was used in this run because costs and returns used in the FORPLAN model were based on FY 1982 data. By using FY 1982 budget, it ensures consistency between the budget constraint and the data set. Based on the 1982 fiscal obligated fund summary, total costs minus carry over dollars and payments to counties, $9.81 million was spent. Total costs discounted to 1978 dollars equals $7.04 million. Eighty percent of $7.04 million times 43 percent (cost in FORPLAN) equals $2.424 million per yer or $24.24 million per decade.

d. Results

Tables B-96 to B-99 compare the reduced budget run to Alternative D. Table B-96 displays the management prescription assignment of the two runs. Table B-97 compares the PNV and B/C ratio between Alternative D and the reduced budget run. Table B-98 provides discounted benefits and costs by elements for the runs. Finally, Table B-99 displays the differences between key activities and outputs of Alternative D and the 80 percent budget run.

No changes occur in the prescription allocation of the reduced budget run, obviously due to the constraint on the allocation in Alternative D.

Tables B-97 and B-98, which provide economic indicators comparing the reduced budget run to Alternative D, show a $14 million decrease in the PNV of the reduced budget run. However, the benefit/cost ratio increases from 5.9 to 6.8. The increase is a result of the marginal decrease in discounted costs being greater than the marginal decrease in discounted benefits when the reduced budget run is compared to Alternative D.

The discounted benefits displayed in Table B-98 indicate a drop in discounted benefits in the reduced budget run of $28 million over Alternative D. The decrease in discounted benefits is spread across two elements with decreases of $1 million in recreation and $27 million in the timber element.

The $1 million reduction in the recreation element results from some of the acres in management prescription 6.1 shifting from high recreation intensity to medium recreation intensity. In order to meet the budget constraint, 16,000 acres of the 124,000 acres in management prescription shifted from the high to medium recreation intensity under the reduced budget run.

The reduction in the timber element was because timber volume went from 347 MMBF in Alternative D to 310 MMBF in the reduced budget run in decade 1. The original constraint in the reduced budget run was 347 MMBF in decade 1, the same as Alternative D. Because of the budget constraint, this constraint was loosened to 310 MMBF to get a feasible solution.

The discounted costs section of Table B-98 shows a reduction of $14 million in discounted costs for the reduced budget run with the entire $14 million coming

from the timber element. In order to meet the budget requirement, which is constraining in the run, the model is forced to pick less costly methods of harvesting timber which have a lower PNV but meet the budget constraint.

Examining the activity/output chart (Table B-99), it becomes apparent that a major reduction in thinning prescriptions occurred. Thinnings in period 1 are reduced by 34,000 acres or 39 percent in the reduced budget run. There is also a constraint of 30,000 acres of final harvest, which is binding. Without releasing this constraint, the more costly thinning prescriptions, which were dropped from solution due to the budget constraint, could not be replaced by final harvest prescriptions. The result are reductions in LTSY of 11 MMBF/year, total volume of 110 MMBF in decade 1, and sawtimber volume of 37 MMBF in the first decade.

There are no significant changes in the reduced budget run in outputs in the recreation and wildlife elements. A slight reduction in semi-primitive motorized RVD's occurred as a result of the 16,000 acre shift from high to medium recreation opportunity intensity in management prescription 6.1.

3. Preferred Alternative, High OGM Demand

a. Purpose: To analyze the sensitivity of the preferred alternative to OGM development on ANF at 1980 to 1982 levels. For additional information on the high OGM demand scenario, see Section IV.B.

b. Objective: Identify and discuss the effects on economic indicators and key activities and outputs as a result of a high levels of OGM activity on the ANF.

c. Constraint Sets

- Include all constraints in Section III.C. Alternative D.
- High OGM Demand Scenario
  - Constraint: Require 189,000 acres to receive a high OGM prescription
  - Rationale: In the development of alternatives, the low OGM demand estimates were used. This decision was a result of

the benchmark analysis which indicated the high OGM demand scenario would have a greater effect on the allocation of prescriptions than the low OGM demand. The Management Team then decided due to high risk and uncertainty of OGM development, the allocation should not be based on a high level of OGM development which is not controlled by the Forest. They decided we should test the sensitivity of the preferred alternative to high OGM demand. Under low OGM demand 65,000 acres are allocated to a high OGM prescription, while under high OGM demand 189,000 acres are allocated.

d. Results

As in the reduced budget run, Tables B-96 to B-99 compare the high OGM demand run to the preferred alternative (Alternative D). Table B-96 displays the management prescription assignment. Table B-97 compares the PNV and B/C ratio of Alternative D and the high OGM demand run. Table B-98 displays discounted benefits and costs by elements for the runs. Table B-99 provides a comparison of selected activities and outputs of Alternative D and the high OGM run.

There was no change in prescription assignments since the high OGM run was required to have the same number of acres in each management prescription as the low OGM run.

The economic indicators in Tables B-97 and B-98 show a present net value drop of $46 million when the high OGM run is compared to Alternative D. The benefit/cost ratio goes from 5.9 to 5.2. These changes are a result of a $43 million decrease in discounted benefits a $3 million increase in discounted costs.

The display of discounted benefits by element in Table B-98 indicates large decreases of $21 million and $30 million in the recreation and timber elements, respectively. The reason for the decrease in the recreation element is because the OGM prescriptions place significantly less emphasis on recreation. No trails are built and little emphasis is placed on dispersed recreation. As a result, the number of RVD's produced are low when compared to the low OGM prescriptions. Most of the decrease in recreation is

due to the shift of acres for these 3 medium recreation/wildlife intensity to the 3 high OGM prescription.

The decrease in the timber element occurs for two reasons. The first is because increased OGM development takes land out of timber production. The timber removed from OGM clearings shows a benefit in the OGM element instead of the timber element (the reason for the $10 million increase in discounted benefits in the OGM element). The clearings also reduce the per acre yields for land remaining in timber management within OGM developments.

As indicated earlier, discounted costs increase by $3 million in total. An increase in discounted costs of $9 million occurred in the OGM element. This was partially offset by the decrease in discounted costs of $1 million, $2 million, and $3 million in the recreation, wildlife, and timber elements, respectively. The decrease in the recreation and wildlife elements results from the lower emphasis placed on these elements in the OGM subgoal. The decrease in the timber element cost results primarily from decreased road building; OGM developers build many of them. The increase in discounted costs of the OGM element results from the increased development activity.

Table B-99 is a summary of key activities and outputs for the Alternative D and the high OGM run. A decrease in LTSY of 4 MMBF/year occurred in the high OGM run. There was a slight reduction in hardwood sawtimber volume, a result of acres taken out of production. The only significant change in RVD's occurred in the roaded natural category, where RVD's in the high OGM run decreased by approximately 19 percent over the preferred alternative. This results from a reduced emphasis on recreation and wildlife in the high OGM prescriptions.

4. Analysis of Growth Requirements in the Preferred Alternative

In the preferred alternative, growth reaches 90 percent of LTSY by 2030. The following decade (decade 6) growth drops below 90 percent to 76 percent. After decade 6, growth rises to above 90 percent of LTSY for the remainder of the planning horizon. Since growth reaches 90 percent of LTSY by 2030, a departure is not necessary for this reason.

Variations on the Preferred Alternative

TABLE B-96 MANAGEMENT PRESCRIPTION ASSIGNMENTS FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

Management Prescription		Total M Acres Assigned		
		Alt. D	80% Budget	High OGM Demand
Aspen, Grouse	1	7	7	7
Uneven-aged, Non-game	2	6	6	6
Even-aged, Turkey, Deer	3	327	327	327
Even-aged, Softwood	4	0	0	0
Wilderness	5	10	10	10
Recreation, Wildlife	6.1	124	124	124
Even-aged 10 yr. SPNM 30 yr.	6.2	20	20	20
Wetland Wildlife	6.3	0	0	0
Long Rotation Primitive	6.5	0	0	0
Developed Recreation	7	0	0	0
Special Areas	8	0	0	0
Minimum Level	9.1	9	9	9

TABLE B-97 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ECONOMIC INDICATORS*	Alt. D	80% Budget	High OGM Demand
PRESENT NET VALUE (MM$)	384	370	338
CHANGE PNV FROM MAX PNV WITH MMR	-14	-46	
BENEFIT/COST RATIO	5.9	6.8	5.2

*Discount rate 4%.

TABLE B-98 ECONOMIC INDICATORS FROM FORPLAN FOR ALTERNATIVE D BY ELEMENT

ECONOMIC INDICATORS*	Alt. D	80% Budget	High OGM Demand
DISCOUNTED BENEFITS (MM$)			
Element			
Recreation	156	155	135
Wilderness	4	4	4
Wildlife	26	26	24
Timber	274	247	244
OGM	1	1	11
Support	1	1	1
TOTALS	462	434	419
DISCOUNTED COSTS (MM$)			
Element			
Recreation	5	5	4
Wilderness	1	1	1
Wildlife	10	10	8
Timber	57	43	54
OGM	2	2	11
Support	3	3	3
TOTALS	78	64	81

Discount Rate 4%

TABLE B-99 KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT		Alt. D		80% Budget		High OGM Demand	
		M Units	M$	M Units	M$	M Units	M$
TIMBER							
LTSY (MBF/Year)		89		78		85	
Timber Volume (MBF/Decade)							
Hardwood Sawtimber							
Decade	1	347	50677	310	39029	334	47517
	2	426	56451	373	53501	353	48525
	3	541	115692	445	91873	473	89812
	4	555	121698	487	105594	530	113846
	5	617	128325	537	123868	587	120287
	10	486	90144	490	82641	447	80029
	15	491	93272	464	99331	490	96186
Softwood Sawtimber							
Decade	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	0	0	0	0	0	0
	10	0	0	0	0	0	0
	15	0	0	0	0	0	0
Hardwood Pulpwood							
Decade	1	539	0	466	25	512	0
	2	460	7	403	0	493	12
	3	345	1	331	9	373	13
	4	331	0	289	4	316	0
	5	269	0	239	8	259	0
	10	400	4	286	4	399	7
	15	395	0	312	5	356	7
Softwood Pulpwood							
Decade	1	0	0	0	0	0	0
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	0	0	0	0	0	0
	10	0	0	0	0	0	0
	15	0	0	0	0	0	0

Table B-99 (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

ACTIVITY/OUTPUT BY PROBLEM STATEMENT		Alt. D		80% Budget		High OGM Demand	
		M Units	M$	M Units	M$	M Units	M$
Total Timber Volume							
Decade	1	886	50677	776	39054	846	47517
	2	886	56458	776	53501	846	48537
	3	886	115693	776	91882	846	89825
	4	886	121698	776	105598	846	113846
	5	886	128325	776	123876	846	120287
	10	886	90148	776	82645	846	80029
	15	886	93272	776	99336	846	96193
Final Harvest (acres)							
Decade	1	30		30		30	
	2	31		30		24	
	3	44		35		35	
	4	28		29		30	
	5	37		30		34	
	10	38		33		32	
	15	40		31		36	
Thinnings (acres)							
Decade	1	87		53		88	
	2	71		43		97	
	3	18		29		55	
	4	70		48		79	
	5	19		16		35	
	10	42		23		49	
	15	1		5		22	
Selection (acres)							
Decade	1	7		7		7	
	2	0		0		0	
	3	7		7		7	
	4	0		0		0	
	5	7		7		7	
	10	0		0		0	
	15	7		7		7	
Herbicide (acres)							
Decade	1	18	612	18	615	18	607
	2	16	564	16	538	13	446
	3	26	904	19	643	20	685
	4	14	478	14	494	17	570
	5	20	700	16	551	19	573
	10	21	724	17	599	16	563
	15	22	753	16	572	20	678

Table B-99 (con't) KEY ACTIVITY/OUTPUT AND BUDGET/RECEIPT SUMMARY FROM FORPLAN FOR ALTERNATIVE D BY CONSTRAINT SET

RECREATION/WILDLIFE							
SPNM W03 (RVD/Decade)							
Decade	1	296	2757	283	2628	296	2734
	2	417	3870	397	3683	411	3816
	3	658	6101	621	5757	648	6008
	4	732	6816	689	6399	718	6672
	5	605	5610	570	5289	590	5478
	10	605	5620	570	5289	590	5478
	15	771	7148	725	6751	755	7008
SPM W05 (RVD/Decade)							
Decade	1	3678	28653	3671	28594	3552	27669
	2	3723	29004	3716	28945	3597	28020
	3	3768	29354	3761	29295	3642	28370
	4	3820	29761	3813	29704	2694	28777
	5	3842	30201	3835	29876	3716	28949
	10	3842	30201	3835	29876	3716	28949
	15	3842	30201	3835	29876	3716	28949
RN W07 (RVD/Decade)							
Decade	1	4994	26968	5006	27033	4064	21945
	2	5246	28331	5248	28340	4060	21926
	3	5499	29694	5490	29647	4057	21907
	4	5817	31409	5801	31326	4240	22898
	5	5975	32267	5957	32166	4332	23394
	10	5930	32020	5908	31905	4201	22687
	15	5930	32020	5908	31905	4201	22687
Big-Game (WFUD/Decade)							
Decade	1	1471	32753	1469	32709	1306	29075
	2	1621	36069	1622	36085	1427	31760
	3	1685	35715	1684	37482	1460	32497
	4	1744	38817	1729	38477	1510	33620
	5	1706	37964	1719	38276	1509	33598
	10	1684	37982	1672	37231	1481	32957
	15	1707	37999	1726	38426	1449	32245

United States
Department of
Agriculture

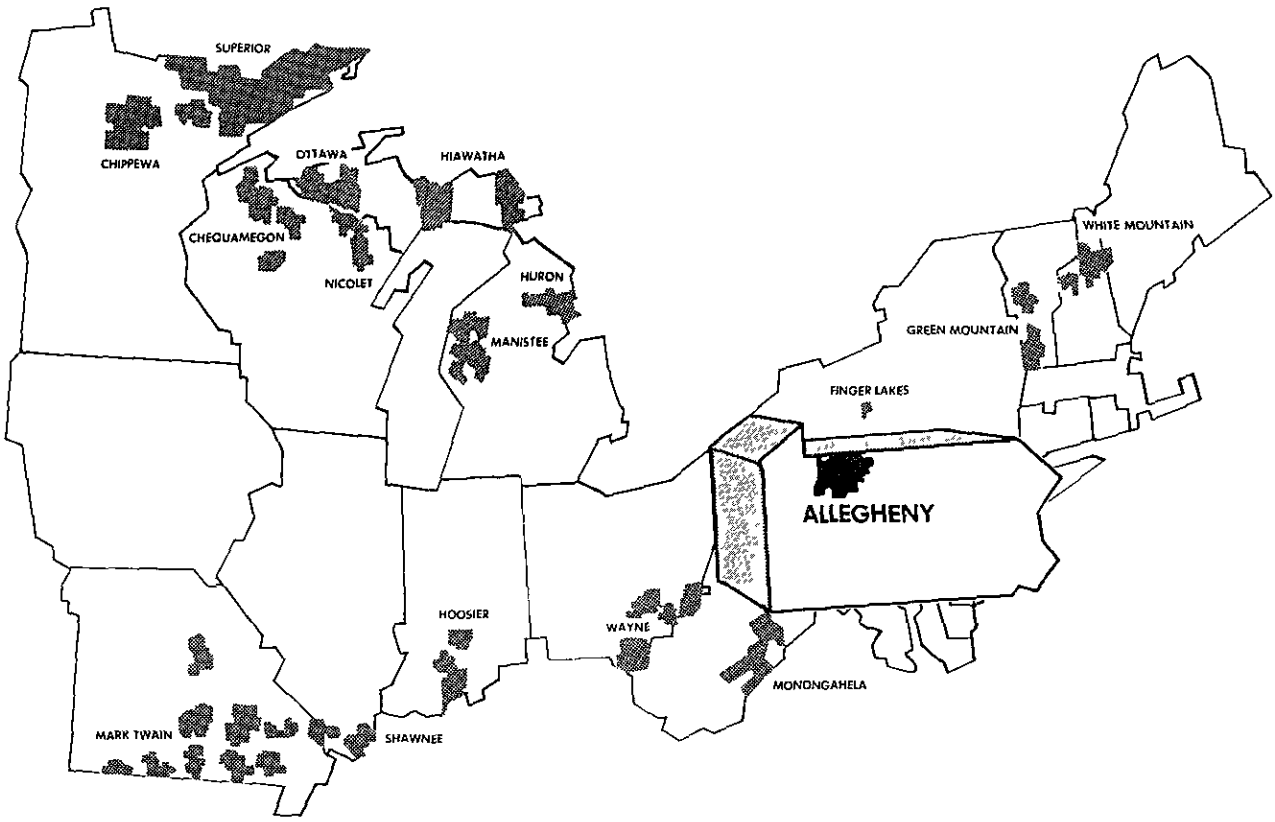
Forest
Service

**Eastern
Region**

Maps

For Land and Resource Management Plan and Final Environmental Impact Statement

ALLEGHENY NATIONAL FOREST



Allegheny National Forest

U.S.D.A. – FOREST SERVICE EASTERN REGION

LAND AND RESOURCE MANAGEMENT PLAN

1986

Management Area Map

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

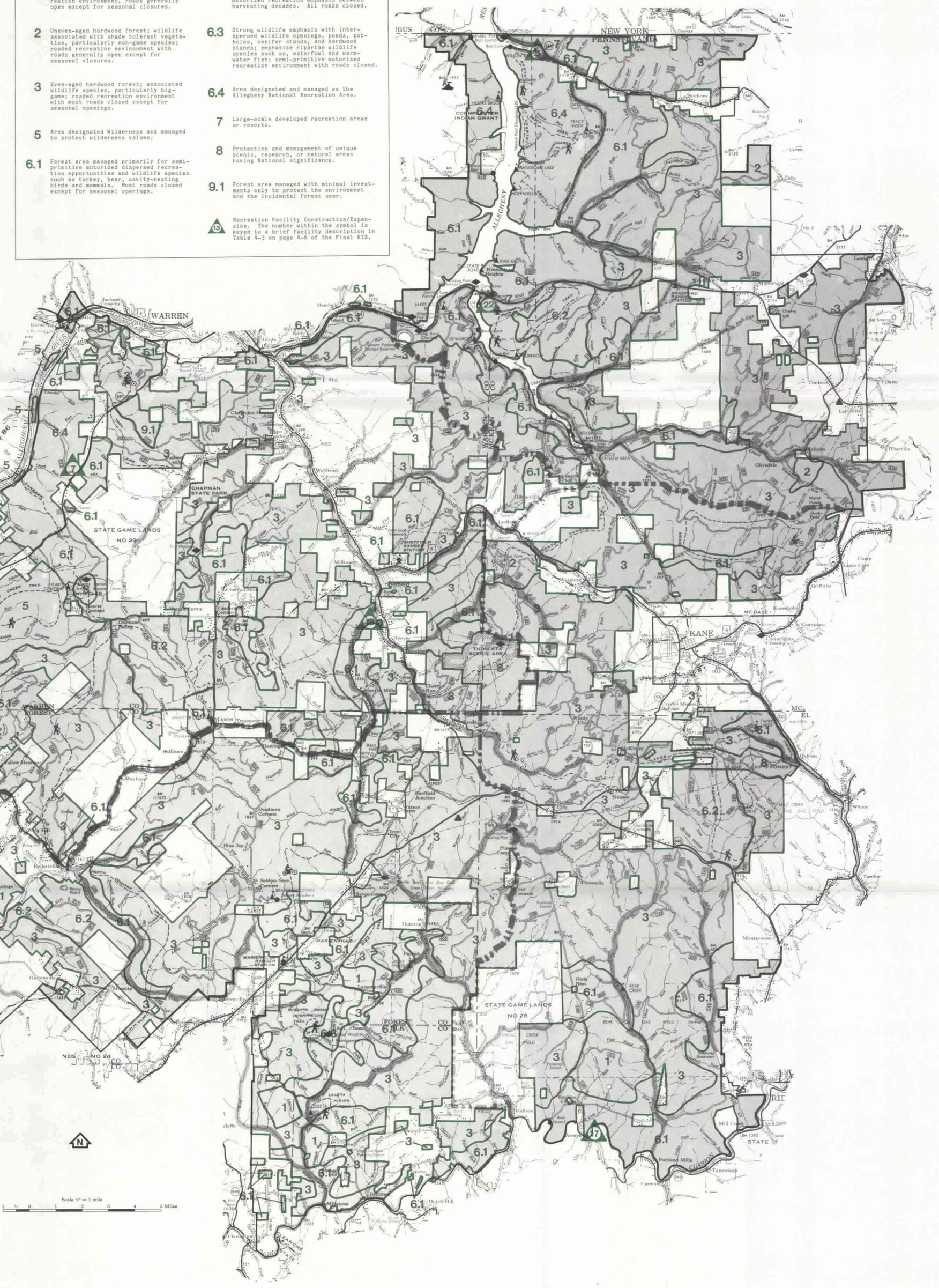
6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

△13 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.



Allegheny National Forest
Land & Resource Management Plan

U.S.D.A. – FOREST SERVICE EASTERN REGION

Final
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MANAGEMENT AREA MAP

ALTERNATIVE A

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

4 Even-aged conifer forest with associated wildlife species; roaded recreation environment with some roads closed.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

13 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.

KEY MAP

Scale ½" = 1 mile

N

Allegheny National Forest
Land & Resource Management Plan

U.S.D.A. – FOREST SERVICE EASTERN REGION

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MANAGEMENT AREA MAP

ALTERNATIVE B

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

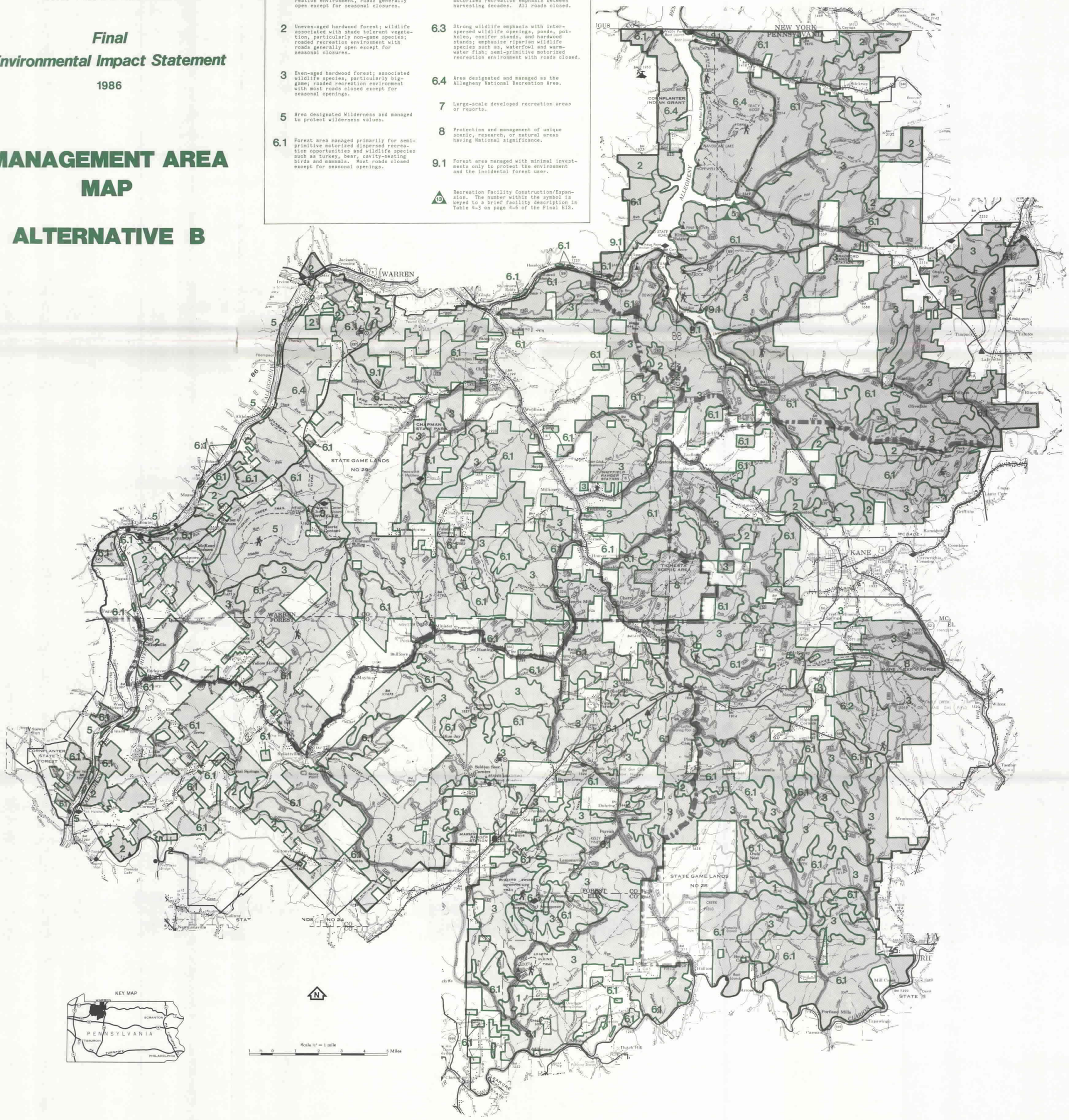
6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

19 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.



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MANAGEMENT AREA MAP

ALTERNATIVE B

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

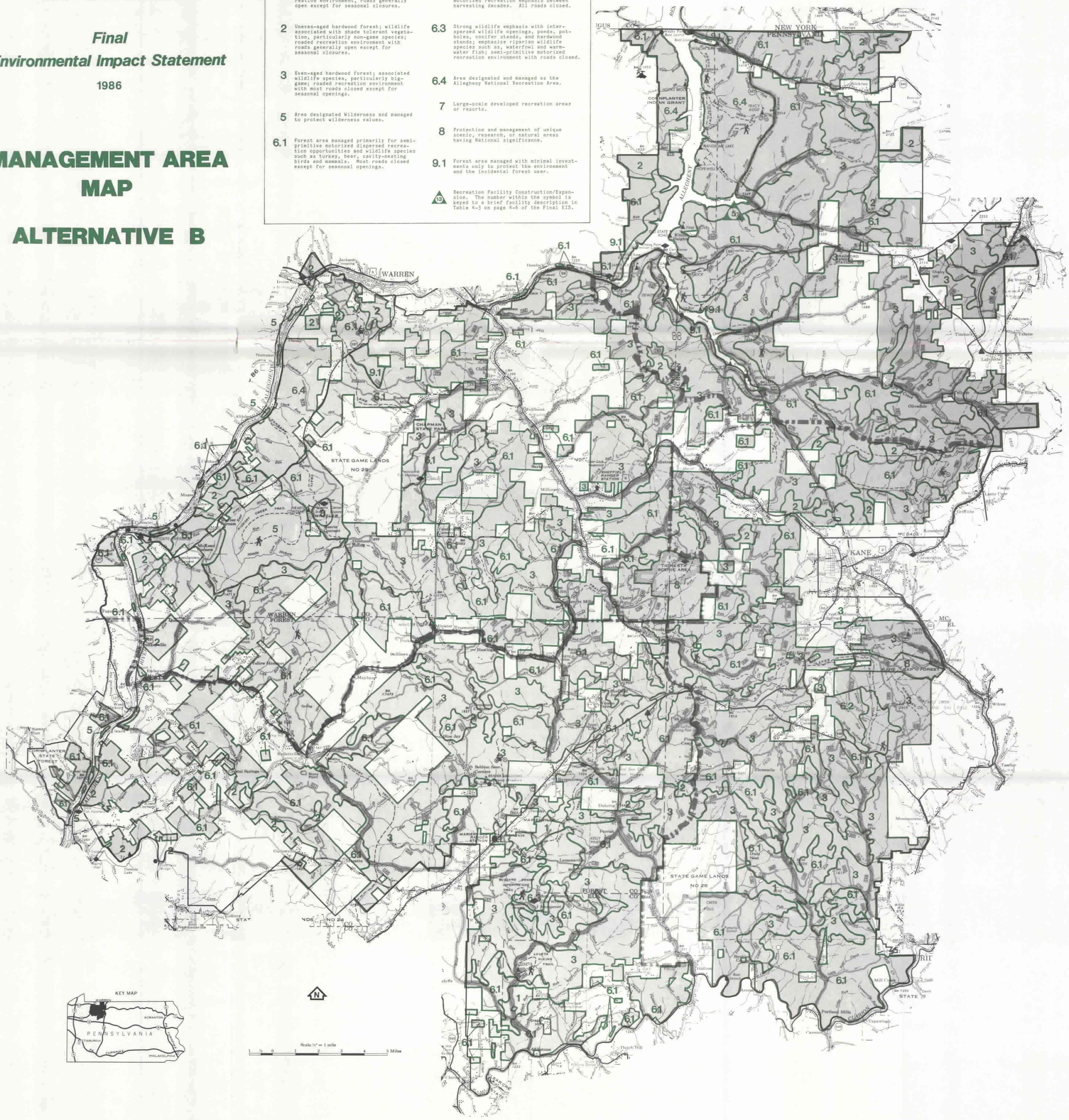
6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

19 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.



Allegheny National Forest

Land & Resource Management Plan

U.S.D.A. – FOREST SERVICE EASTERN REGION

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MANAGEMENT AREA MAP

ALTERNATIVE D

(PREFERRED)

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

▲13 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.

KEY MAP

Scale ½" = 1 mile

1 ½ 0 1 2 3 4 5 Miles

Allegheny National Forest
Land & Resource Management Plan

U.S.D.A. – FOREST SERVICE EASTERN REGION

Final
Environmental Impact Statement

1986

MANAGEMENT AREA MAP

ALTERNATIVE B

Management Area Legend

1 Mixed even-aged forest with a large aspen component; wildlife species emphasis on grouse as well as other early successional species; roaded recreation environment, roads generally open except for seasonal closures.

2 Uneven-aged hardwood forest; wildlife associated with shade tolerant vegetation, particularly non-game species; roaded recreation environment with roads generally open except for seasonal closures.

3 Even-aged hardwood forest; associated wildlife species, particularly big-game; roaded recreation environment with most roads closed except for seasonal openings.

5 Area designated Wilderness and managed to protect wilderness values.

6.1 Forest area managed primarily for semi-primitive motorized dispersed recreation opportunities and wildlife species such as turkey, bear, cavity-nesting birds and mammals. Most roads closed except for seasonal openings.

6.2 Even-aged hardwoods, logging activities limited to one decade every 40 years; associated wildlife species, particularly big-game; semi-primitive non-motorized recreation emphasis between harvesting decades. All roads closed.

6.3 Strong wildlife emphasis with interspersed wildlife openings, ponds, potholes, conifer stands, and hardwood stands; emphasize riparian wildlife species such as, waterfowl and warm-water fish; semi-primitive motorized recreation environment with roads closed.

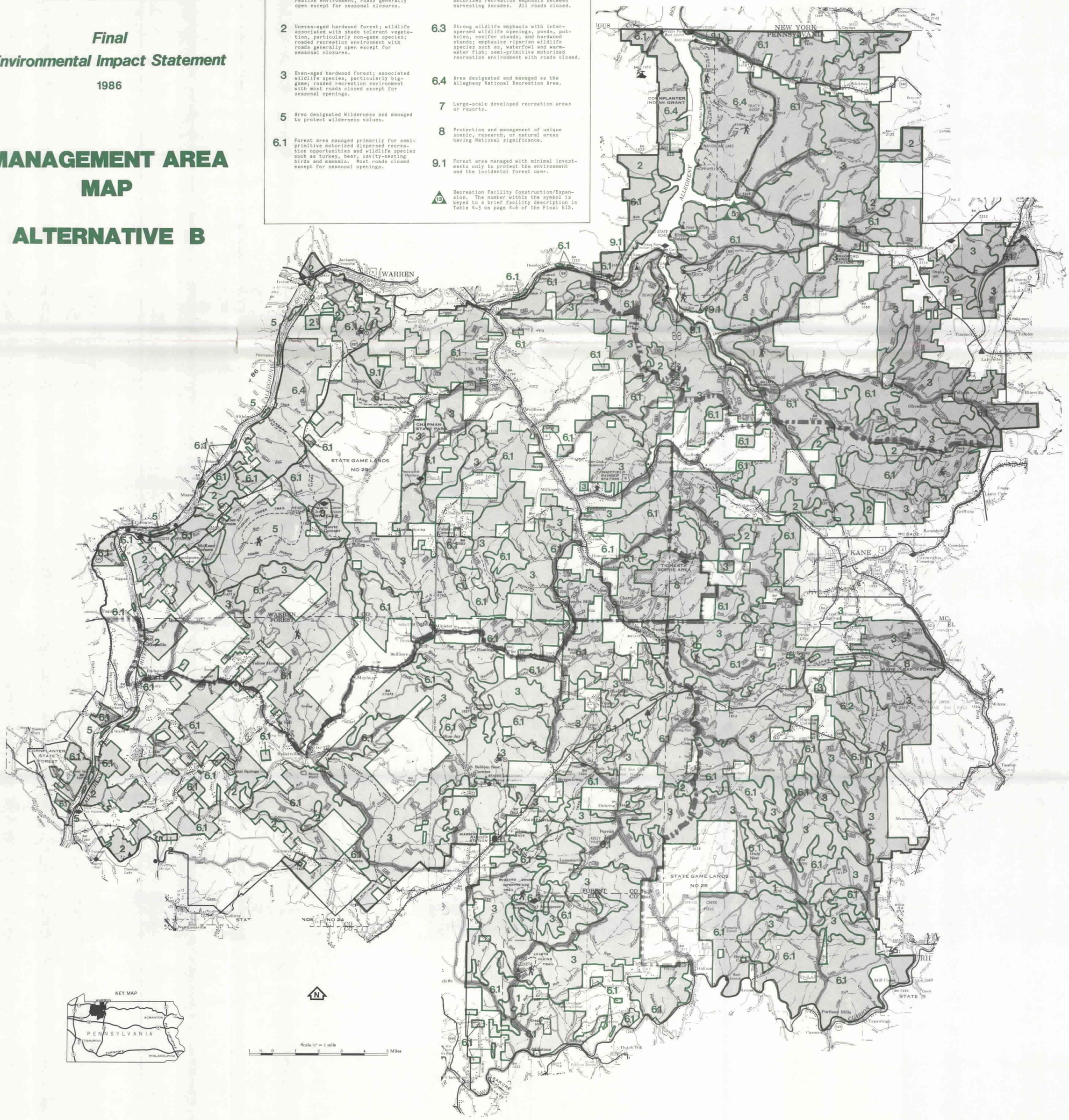
6.4 Area designated and managed as the Allegheny National Recreation Area.

7 Large-scale developed recreation areas or resorts.

8 Protection and management of unique scenic, research, or natural areas having National significance.

9.1 Forest area managed with minimal investments only to protect the environment and the incidental forest user.

19 Recreation Facility Construction/Expansion. The number within the symbol is keyed to a brief facility description in Table 4-3 on page 4-6 of the Final EIS.



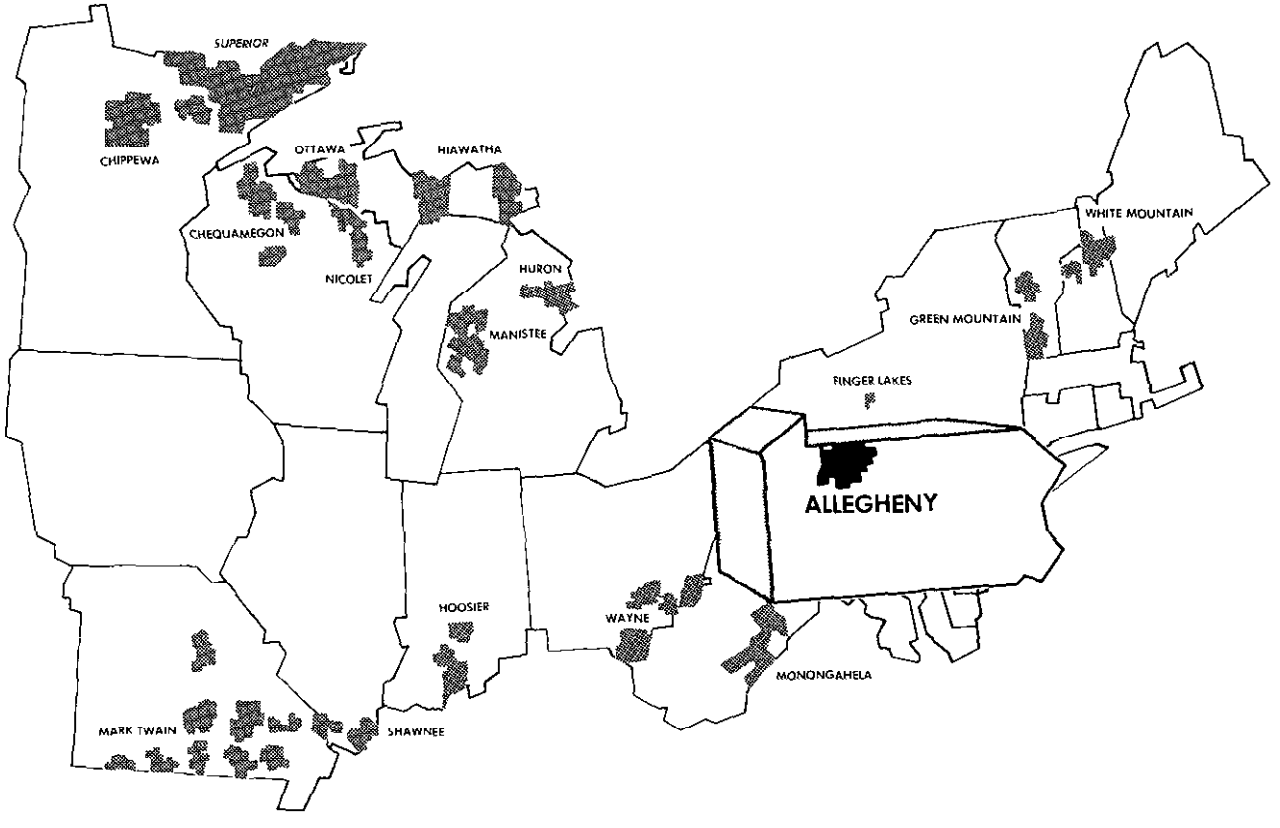
United States
Department of
Agriculture

Forest
Service

**Eastern
Region**

Land and Resource Management Plan

ALLEGHENY NATIONAL FOREST



The Allegheny National Forest

LAND AND RESOURCE MANAGEMENT PLAN

(Alternative D - Final Environmental Impact Statement)

Eastern Region
USDA-Forest Service

March 1986

PREFACE

PURPOSE OF THE PLAN

This National Forest Land and Resource Management Plan (Forest Plan) was developed to direct management of the Allegheny National Forest. The goal of the Forest Plan is to provide a management program reflecting a mixture of management activities that allows for use and protection of national forest resources while fulfilling legislative requirements and addressing local, regional, and national issues. To accomplish this, the Forest Plan:

- Sets management direction through the establishment of short (10-15 years) and long-range goals and objectives throught the year 2035.

- Prescribes the standards, practices, and approximate timing and vicinity necessary to achieve goals and objectives.

- Prescribes monitoring and evaluation needs to ensure that direction is carried out, measures quality and quantity of actual operations against predicted outputs and effects, and forms the basis to implement revisions.

Preparation of the Forest Plan is required by the implementing regulations of the Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA). Assessment of its environmental impacts is required by the National Environmental Policy Act (NEPA) and the implementing regulations of NFMA [36 Code of Federal Regulations (CFR) 219]. The Forest Plan will be reviewed annually and updated as necessary. Once every 10 to 15 years, the plan will be reviewed and revised. The Forest Plan replaces all previous resource management plans prepared for the Allegheny National Forest. With the Forest Plan approved, all subsequent activities affecting the Forest, including budget proposals, must be in compliance with the Forest Plan [36 CFR 219.10(e)]. In addition, all permits, contracts, and other instruments for the use and occupancy of the National Forest must be in conformance with the Forest Plan [16 USC 1604(i)].

LEGISLATIVE BACKGROUND AND EVALUATION OF NATIONAL FOREST SYSTEM PLANNING

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

CREATIVE ACT — Creative Act of March 3, 1891 (26 Stat. 1103, 16 USC 471; repealed by 704(a) of Federal Land Policy and Management Act, 90 Stat. 2792) allows the President to set apart and reserve National Forests from the public domain.

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

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

TRANSFER ACT — Transfer Act of 1905 (33 Stat. 628.16 USC 472) transferred the administration of the National Forests to the Secretary of Agriculture.

WEEKS ACT — Weeks Act of 1911 (36 Stat. 962), as amended; 16 USC 515, 521) authorized the Secretary of Agriculture to purchase "forested, cut-over, or denuded lands" for the purposes of watershed protection and timber production.

MINERALS ON WEEKS LAW LAND ACT — Mineral Resources on Weeks Law Lands, Act of 1917 (39 Stat. 1150, as supplemented; 16 USC 520) authorized the Secretary of the Interior (with consent of the USDA Forest Service) to permit prospecting, development, and utilization of the mineral resources on lands acquired under the Weeks Act of 1911.

MINERAL LEASING ACT	Mineral Leasing Act for Acquired Lands, Act of 1947 (61 Stat. 913; 30 USC 351, 352, 354, 359) allowed the Secretary of the Interior (with consent of the USDA Forest Service) to lease all deposits of coal, phosphate, oil, oil shale, gas, and others which are owned by the United States.
MULTIPLE USE ACT	Multiple Use-Sustained Yield Act (MUSYA) of 1960 states the "National Forests are established and administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes" (16 USC 528). "The Secretary of Agriculture is authorized and directed to develop and administer renewable surface resources of the National Forests for multiple use and sustained yield of the several products and services obtained therefrom. In the administration of the National Forest, due consideration shall be given to the relative values of the various resources in particular cases. The establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of sections 528 to 531 of this title (16 USC 529)." The Secretary is also authorized to cooperate with state and local governmental agencies in management of National Forest (16 USC 530).
WILDERNESS ACT	Wilderness Act of 1964 (16 USC 1131-1136) provided for establishment and administration of the National Wilderness Preservation System to be administered for the use and enjoyment of the American people in such a manner as will leave the system unimpaired for future use and enjoyment as wilderness.
LAND AND WATER CONSERVATION FUND ACT	Land and Water Conservation Fund Act of 1964 [78 Stat. 903, as amended; 16 USC 401-(a), (b)] provided for the purchase of land for recreation purposes from money appropriated from the Land and Water Conservation fund.
NATIONAL ENVIRONMENTAL POLICY ACT	National Environmental Policy Act (NEPA) of 1969 (42 USC 4321-4335) declares a National policy of "productive and enjoyable harmony between man and his environment" (42 USC 4321). The detailed statement requirement of NEPA was designed to disclose to the public, President, Congress, and agency decisionmaker the environmental consequences of implementation of a proposed action and alternatives to it. It applies to major federal actions significantly affecting the quality of the human environment.

MINING AND MINERALS	Mining and Minerals Policy Act of 1970 (84 Stat. 1876; 30 USC 21a) declared "that it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries, (2) the orderly and economic development of domestic mineral resources, reserves, and reclamation of industrial, security, and environmental needs, (3) mining, mineral, and metallurgical research...., and (4) the study and development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined land...".
EASTERN WILDERNESS	Eastern Wilderness Act of 1975 (88 Stat. 2096; 16 USC 1132 note) provided for the designation of wilderness in addition to that allowed by the Wilderness Act of 1964 in the eastern half of the United States.
FEDERAL LAND POLICY ACT	Federal Land Policy and Management Act of 1976 (90 Stat. 2743) dealt with range management and rights-of-way for National Forest System on public domain lands. For the most part, the statute is directed at lands managed by Bureau of Land Management, Department of Interior.
RESOURCES PLANNING ACT	Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, as amended by National Forest Management Act (NFMA) of 1976 (16 USC 1600-1614). This is a comprehensive framework and primary source of direction to the Forest Service to fulfill its mandate to manage the National Forest System. The central element of the Act is the institution of land and resource management planning as a basic means to achieve effective use and production of renewable resources and a proper balance of the use of National Forest System (NFS) lands. Section 6 of the Act requires the Secretary of Agriculture to prescribe NFS land and resource management planning regulations. The standards and guidelines in these regulations must be incorporated into NFS land and resource management plans.
PENNSYLVANIA WILDERNESS ACT	The Pennsylvania Wilderness Act of 1984 (98 Stat. 3100) established the Hickory Creek Wilderness, Allegheny Islands Wilderness, and the Allegheny National Recreation Area. Section 8 of this Act further releases all other areas from wilderness consideration for the duration of this planning cycle.

A HISTORICAL PROFILE: CONGRESSIONAL ACTS AND FOREST PLANNING

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

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

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

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

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

These multiple-use plans usually included specific coordinating requirements to ensure compatibility of resource uses. The Ranger District multiple-use plans were used to coordinate the actions taken to achieve the objectives of the NFS resource development plans.

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

The desire for quality environment, however, did not lessen the need for forest products and services from the National Forest. On the contrary, while concern for the environment reached new heights, so did the demand for products and services. One result of this was the passage of the 1964 Wilderness Act. This Act created the National Wilderness Preservation System and provided for the designation of federal land to be preserved in its natural state.

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

In August 1974, Congress enacted the Forest and Rangeland Renewable Resources Planning Act (RPA). Although it did not significantly change existing Forest Service land management planning procedures, it made the development and maintenance of NFS land and resource management unit plans statutory requirements. It re-emphasized that an interdisciplinary approach be used in the development and maintenance of land management plans. It required that periodic comprehensive national programs be developed that would integrate all Forest Service activities. And it more directly involved Congress in evaluating Forest Service programs and in assigning priorities. The RPA also provided for a periodic assessment of the Nation's renewable resources, including

those of the National Forest System. This Assessment provides the basic information for resource management planning at national, regional, and local levels.

The National Forest Management Act of 1976 amended RPA to provide additional statutory direction on the preparation and revision of NFS land and resource management plans.

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

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

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

Changes in planning policies and procedures have accelerated during the past few years and will continue into the future. These policies and procedures are evolving so rapidly that changes often occur between the start and finish of individual Forest Plans.

These changes along with public comment have caused the final Forest Plan and EIS presented here to be different from the draft documents. These changes will make the Forest Plan a much better document in the long run. A majority of the changes relate to improved analysis techniques (as displayed in the Final Environmental Impact Statement), an improved integration with the National budget situation, and changes in the management and prescriptions.

RELATIONSHIP TO OTHER PLANNING LEVELS

It is important to understand that the planning process is a continuous cycle. The RPA and related planning regulations

require that the USDA Forest Service have a three-level integrated planning process consisting of:

National	RPA Assessment and Program
Regional	Regional Guide
Local	Forest Plan

Development of a Forest Plan occurs within the framework of Forest Service regional and national planning. Every ten years, a comprehensive national (RPA) assessment is made of the forest and rangeland renewable resource situation--timber, range, water, fish, wildlife, outdoor recreation, and wilderness. The RPA program then sets the national direction and output levels for NFS lands based on the National RPA Assessment of the suitability and capability of each Forest Service Region. Short and long-range supply and demand projections are made for each of the resources in the RPA Assessment. Alternative levels of outputs and associated costs are examined in the RPA program which is prepared every five years. Based on an analysis of these alternatives and consideration of public inputs, the Secretary of Agriculture decides on a recommended RPA Program for the Forest Service. The recommended Program and a Presidential Statement of Policy are transmitted to Congress. Congress may accept or revise the Statement of Policy. The final Policy Statement and Program serve as the guide for planning and developing future Forest Service budget proposals.

The Regional Guide links the RPA Assessment and Recommended Program with National Forest planning. It plays the dual role of providing input to development of RPA programs and providing direction for the development of Forest Plans. The Regional Guide displays the Regional RPA Program and sets tentative resource targets for the National Forests. Forest Plans then blend national and regional demands with forest capabilities and needs.

Individual Forest Plans are the foundation of regional and national plans. They contain the integrating basic data on biological potential, resource inventories, local economic and social considerations. Information from Forest Plans will be used in revising the Regional Guide.

The Allegheny's Forest Plan is based on the various considerations which have been addressed in the accompanying Final Environmental Impact Statement (FEIS). The planning process and the analysis procedure which were used in developing this Plan, as well as the other alternatives that

were considered, are described or referenced in the FEIS. Activities and projects will be planned and implemented to carry out the direction in the Forest Plan. These local projects will be "tiered to" the accompanying Final EIS as provided for in 40 CFR 1502.20. The local, project environmental analysis will use the data and evaluations in the Forest Plan and Final EIS as its basis.

Budget proposals for fiscal year 1986 will be submitted to Congress before this Forest Plan can be implemented. It will be based on the 1985 RPA Assessment data and include operational, maintenance, and investment costs necessary for the continued management of the Allegheny National Forest. Investment projects by their nature are phased in over a period of three to five years. For example, timber sales to be sold in 1988 are inventoried and reconnaissanced in 1986 or earlier, designed and cruised in 1987, and appraised and sold in 1988. Roads, campgrounds, and wildlife habitat projects are phased in the same way. The number and type of skills needed in the organization are also tied directly to these projects.

PUBLIC QUESTIONS ON FOREST PLAN

Questions regarding this Forest Plan should be sent to:

Forest Supervisor
Allegheny National Forest
P.O. Box 847
Warren, PA 16365
Phone: (814) 723-5150

EXTENT OF FINAL FOREST PLAN ACTION

If any particular provision of the proposed action or the application thereof to any person or circumstances is held invalid, the remainder of the proposed action and the application of such provisions to other persons or circumstances shall not be affected thereby.

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CHAPTER 1

Introduction

CHAPTER 1

INTRODUCTION

A. ORGANIZATION OF THE FOREST PLAN

The Forest Plan is organized into five chapters.

Chapter 1 - Introduces the structure of the Forest Plan and provides a brief orientation to the Forest.

Chapter 2 - Summarizes the supply and demand conditions for significant multiple use goods and services common to the planning area.

Chapter 3 - Shows how the Plan addresses the Forest's management problems as identified during the planning process.

Chapter 4 - Provides the goals and objectives for all resource management activities and establishes the management standards and guidelines for the Allegheny.

Chapter 5 - Explains how management direction will be implemented and how these activities will be monitored, evaluated, and kept current in light of changing conditions and assumptions.

Appendices - Appendices are included that provide a glossary, more detailed summaries, and other required data on specific management practices or outputs.

B. FOREST DESCRIPTION

The Allegheny is Pennsylvania's only National Forest, and it comprises a half million acres of land in northwestern Pennsylvania. It was established in September 1923, with ownership of surface rights being of principal concern. Title to the oil, gas, and minerals was viewed with secondary concern and acquired on only a very small percentage of tracts during the early decades of Forest acquisition.

The Allegheny National Forest lies within Elk, Forest, McKean, and Warren Counties. The Forest is adjacent to several large metropolitan areas including Erie to the northwest, Buffalo to the north, Pittsburgh to the south, and the Youngstown-Akron-Cleveland area to the west. It is from these areas that the Allegheny National Forest attracts most of its recreation clientele and other forest users.

Figure 1-1 shows the location of the Forest from a national, regional, and local perspective.

The Forest is situated in the rugged plateau country of northwestern Pennsylvania. The topography is characterized by flat to rolling plateaus which are frequently dissected by stream valleys. These valleys are sometimes steep. The land is primarily timbered and helps to support local industries with fine hardwood timber such as black cherry, maple, ash, and oak. In 1983, over 61 million board-feet of timber were harvested. The watersheds provide high quality water supplies for local communities and habitat for deer, black bear, squirrels, rabbits, grouse, non-game species, and predators. At least 49 different mammals are common to the Allegheny. Water is a plentiful resource with several reservoirs and over 500 miles of stream available. These provide for a variety of fishing and hunting experiences. Opportunities for forest-based recreation are both numerous and diverse. Many miles of trails exist for the hiker, cross-country skier, and snowmobiler. Developed recreation facilities include four beaches, six boat launches, eighteen campgrounds, three overlooks, and nine picnicking areas. Many of these facilities are located around the 7,634-acre Allegheny Reservoir on the upper Allegheny River.

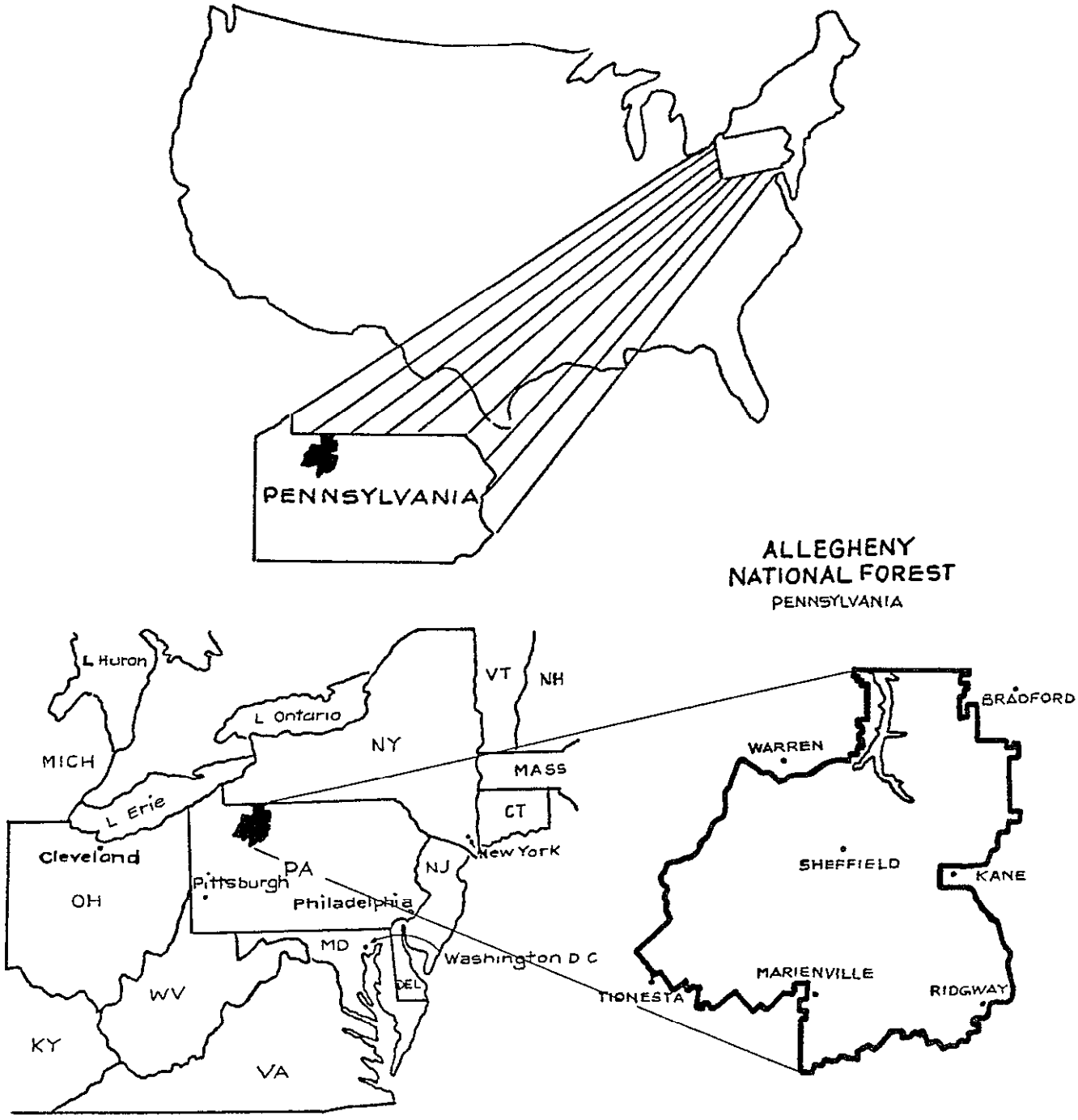


Figure 1-1. Allegheny National Forest Vicinity Map.

CHAPTER 2

Management Situation

CHAPTER 2

MANAGEMENT SITUATION

Forest Plans must assure that they provide for multiple-use and a sustained yield of products and services. In addition, Forest Plans must provide this multiple-use and sustained yield of goods and services from the Allegheny National Forest in a way that maximizes long-term net public benefits in an environmentally sound manner.

For the analysis of the management situation, NFMA identified specific requirements that must be analyzed. They include the maximum potential supply of significant resources, the projected demand for resources, and the Forest Plan objectives which are to resolve the planning problems.

A. SUPPLY OF FOREST OUTPUTS

Table 2-1 compares the resource production and use levels that would be provided by the Allegheny National Forest with:

- o current management direction (Alternative B in the Environmental Impact Statement)
- o supply potential for important resources
- o Forest Plan Alternative D and variation (D2)

The major conclusion of the demand analysis is that within our limits of production capability all outputs from the Allegheny would be consumed. An exception to this is Range outputs. The Allegheny National Forest has areas that could provide grazing units. However, according to a study by Bowersox and Strauss (1980), the market demand for grazing areas is near nonexistent. Bowersox and Strauss surveyed private livestock owners adjacent to the Forest.

The survey revealed that the livestock operations are relatively small and the operators have adequate supplies of pasture at, or very near, the central farm. Since public demand for hay or livestock grazing is nonexistent, no management of this resource is planned.

Expected demand levels are not shown on Table 2-1 because reliable, quantifiable estimates of demand were not possible to obtain. The results of demand analysis are described later in this chapter and in the Economic Efficiency Analysis section of Appendix B of the Final EIS.

Current management is the level of outputs and uses provided by projecting present management direction into the future. Current management direction is further defined in the Final Environmental Impact Statement as Alternative B.

Table 2-1 Current Outputs, Resource Supply Potential, and Forest Plan Objectives for RPA Time Periods

OUTPUTS/CATEGORY	TIME PERIODS 1986 1995	1996 2005	2006 2015	2016 2025	2026 2035
Developed Recreation MRVD[1]					
Current Management	7,769	7,829	7,829	7,829	7,829
Supply Potential	9,460	12,348	13,783	17,156	17,276
Forest Demand					
Alternative D	8,861	9,409	9,788	10,139	10,190
Variation (D2)[2]	(8,861)	(9,409)	(9,788)	(10,139)	(10,190)
Dispersed Recreation MRVD[1]					
Current Management	7,953	7,894	7,851	7,873	7,861
Supply Potential	13,351	13,615	13,875	14,207	14,370
Forest Plan					
Alternative D	8,866	9,227	9,747	10,173	10,216
Variation (D2)	(7,808)	(7,909)	(8,169)	(8,456)	(8,432)
Wilderness MRVD[1]					
Current Management	102	157	176	195	204
Supply Potential	374	578	645	713	747
Forest Plan					
Alternative D	102	157	176	195	204
Variation (D2)	(102)	(157)	(176)	(195)	(204)
Wildlife and Fish M WFUD[1]					
Current Management	3,567	3,797	3,820	3,913	4,054
Supply Potential	3,967	4,876	5,486	6,066	6,370
Forest Plan					
Alternative D	3,921	4,384	4,643	4,912	5,088
Variation (D2)	(3,659)	(4,010)	(4,189)	(4,414)	(4,594)
Timber MMBF[1]					
Current Management	623	623	623	623	623
Supply Potential	1,362	1,362	1,362	1,362	1,362
Forest Plan					
Alternative D	945	945	945	945	945
Variation (D2)	(905)	(905)	(905)	(905)	(905)

1 See the definitions of these units in the glossary in Appendix A.
2 D2 is a variation of the Forest Plan that estimates the results if a high rate of private oil and gas development is experienced during implementation.

Supply potential is the highest level of production achievable on the Allegheny National Forest. This level of outputs is based on the physical or biological limits of each Forest resource.

Totals shown are for all resource elements combined. For example, wildlife use from habitat investments in the wildlife element, and wildlife use derived from timber harvests are combined in the table.

DEVELOPED RECREATION — The potential developed recreation facilities on the Forest were inventoried, and the potential maximum capacity of use was estimated. Facilities in this category include campgrounds, picnic areas, boat launches, swimming beaches, overlooks, and parking lots.

DISPERSED RECREATION — The potential for dispersed recreation was estimated using maximum practical use densities for each recreation opportunity spectrum (ROS) class. Each ROS class has a different use density. For example, Roaded-Natural class has a significantly higher use density than Semi-Primitive Motorized. The total of all ROS classes are shown in Table 2-1. See Chapter 4 Section B of this plan for a use summary by ROS class.

WILDERNESS — The potential for wilderness use was also estimated using maximum practical use densities. The semi-primitive non-motorized ROS class densities were used.

WILDLIFE AND FISH — The potential for wildlife and fish user days was estimated by first estimating the highest number of animals which could be produced, and then estimating the consumptive use (number of hunters and fisherman) which the resource could support without adversely affecting population level objectives. An estimate of the nonconsumptive use of wildlife was also made.

TIMBER — The potential for timber production was derived using the timber management strategies which provide the highest total volume possible on the Forest.

B. RESOURCE DEMANDS

The Allegheny National Forest completed a demand analysis to assist in the evaluation of conflicts from resource allocation and to avoid situations where investments might be incurred to produce or provide outputs which have little or no identifiable value. This analysis assumed that the local demand schedule for all outputs is perfectly elastic over an established quantity interval. That is, general market prices have been, and are expected to be, insensitive to the levels of production on the Allegheny National Forest. This was assumed because the Forest does not control a significant portion of the market, and sizable quantities of goods, services, and uses are available from other resource suppliers within the market area.

The conclusion after studying alternative consumption estimates based upon different assumptions, public involvement results, and output levels in the early stages of Forest Plan alternative development is that all outputs in each alternative would be consumed. Resource supply is expected to be below demand levels.

Demand considerations for each major resource area are provided below.

DEVELOPED RECREATION

Demand for developed recreation, particularly camping, has likely been constrained by lack of facilities around the Allegheny Reservoir and other major river corridors. No new campground construction has occurred in recent years, and campground occupancy has been high at existing sites. Thus, projections of past use to represent demand for developed recreation are not considered reliable.

The demand analysis and public involvement results reveal an unfulfilled need for more developed recreation facilities around the Allegheny Reservoir, Tionesta Creek, and the Allegheny and Clarion Rivers.

DISPERSED RECREATION

Consumption estimates for dispersed recreation were derived from applying the recreation growth indices from the 1980 RPA "An Assessment of the Forest and Rangeland Situation in the United States," to the current recreation and use levels. Results indicate that projected consumption will exceed potential supply estimates for each decade in our analysis.

WILDERNESS

No efforts were made to quantify demand for wilderness use. Estimated demand for wilderness use is complex and philosophically difficult.

It must be concluded that the demand for wilderness experience on the ANF is very high, given that half the country's population lies within a day's drive of the Forest. This fact was recognized by Congress in passage of the "Pennsylvania Wilderness Act of 1984." Except for the 10,000 acres designated on the Allegheny National Forest, there are no federal wilderness areas in the entire New York, Ohio, New Jersey, Maryland area. New York has the Adirondack Preserve, and Pennsylvania manages a system of relatively small "wild" areas. There is also a significant wilderness opportunity in Canada, not far to the north. The closest other Federal wilderness, however, is located on the Monongahela National Forest in West Virginia (78,000 acres).

It seems obvious that the demand for wilderness designation on the Forest is high, and the available supply in the regional area is low.

WILDLIFE AND FISH

Consumption estimates for wildlife were derived by applying the growth indices from the 1980 RPA "An Assessment of the Forest and Rangeland Situation in the United States," to the current wildlife use levels. Results indicate that projected consumpted will exceed potential supply estimates for each decade in our analysis.

TIMBER

Projections of past timber harvest into the future and RPA projections of future harvest fall short of volumes being produced on the Forest today.

After several public meetings and meetings with the local timber industry, the following conclusions were reached:

- the Allegheny National Forest provides a relatively small part of the local region's sawtimber supply,
- the Allegheny National Forest could double or triple its sawtimber offer without requiring any major new investments in mill capacity,
- the Allegheny National Forest could at least double its sawtimber sale offer immediately,
- pulpwood supplies will continue to outstrip consumption needs in the forseeable future.

MINERALS

Energy minerals are another significant commodity produced on the Allegheny National Forest, but 96 percent are privately owned. For additional discussion about minerals supply and demand, see Page B-80 in Appendix B of the Final EIS and Page 3-3 in Section A of Chapter 3 of the Final EIS.

CHAPTER 3

Plan Response to Management Problems

CHAPTER 3

PLAN RESPONSE TO MANAGEMENT PROBLEMS

A. INTRODUCTION

Issues submitted by the public as well as concerns from within the Forest Service, helped the Forest to reassess the direction for future management of the Allegheny National Forest. These public issues and Forest Service concerns did confirm the need to reassess current direction and also guided the Forest Service in preparation of the Final EIS and accompanying Forest Plan.

Public issues were identified through various types of citizen participation including public meetings, comment forms, and individual contacts. For a detailed explanation of this process, see the Final EIS, Appendix A.

This chapter will show how the plan addresses and responds to major public issues, management concerns, and resource opportunities known as the management problems.

B. MANAGEMENT PROBLEMS

Management Problem 1 - Providing Developed Recreation

Recreation on the ANF is an important public benefit. During the 1960's, recreation opportunities expanded rapidly with construction of the 7,634-acre Allegheny Reservoir and its modern National Forest campgrounds and boating facilities.

Currently, these campgrounds around the reservoir are often full, and on most summer weekends boating facilities are busy, although not crowded. More rustic campgrounds elsewhere on the Forest have fewer campers, but these campers are those who value their solitude. Only one national forest campground is available along the Clarion and Allegheny Rivers, or along Tionesta Creek. Private, state, and Corps of Engineers campgrounds are also located along these rivers and creeks.

People do disagree about the need for new campgrounds -- either modern or rustic -- or for additional boating facilities. They also disagree about whether these facilities should be financed by the Allegheny National Forest or by private investors.

Allegheny Reservoir

Some citizens believe that the reservoir can accommodate even more modern campgrounds and boating facilities. They believe that more development should occur and that the scenic beauty can be retained if development is carefully planned. Development would create new jobs, raise local income and revenues, and satisfy users who prefer comfortable, modern campgrounds.

Other citizens believe that the undeveloped character of the reservoir is unique in the Eastern U.S. and that its scenic qualities should be preserved.

Allegheny and Clarion Rivers and Tionesta Creek

Boating and fishing on these streams is increasing, but public boating access points and campgrounds are not always available along the streams.

Public or Private Financing of Recreation Facilities

Historically, the Allegheny N.F. has financed construction of all recreation facilities and has operated most facilities, except for the marina on the Allegheny Reservoir. Now, however, private developers may become involved in the construction and the operation of both existing and planned recreation facilities.

Resolution: Through a combination of private sector and Forest Service investments, increase recreation opportunities for camping, increase boat launches around the major water attractions on the Forest, and add a new motel/restaurant complex along Route 59 adjacent to the Allegheny Reservoir Marina. Where feasible, private capital will finance new construction. Existing scenic drives will be maintained. Bank fishing areas will be developed around the Allegheny Reservoir.

The possibility exists that the private sector will not take the opportunity to construct the campgrounds and the motel/restaurant complex. If the private sector does not make the necessary investments, the Forest Service will pursue the funding necessary to construct the campgrounds but not the motel/restaurant complex.

Management Problem 2 - Providing Dispersed Recreation Opportunities

Some dispersed recreation activities, such as hiking, backpacking, and cross-country skiing, depend upon a certain amount of solitude and a natural appearing forest. Roads, trails, and evidence of timber harvests may annoy some people who are interested in these kinds of activities. Increased timber harvesting and oil and gas development have reduced recreation opportunities for those who prefer an experience where they encounter few other people and can view a natural landscape.

Alternatively, many people, including some hunters, fishermen, and off-road vehicle users, rely on roads and trails when they visit the Forest. They do not venture far from their vehicles, and meeting other Forest visitors may even increase their satisfaction. For them, many roads and trails are crucial to their enjoyment of the Forest.

Resolution: Manage for high-quality recreation opportunities in a variety of settings. Large areas for semi-primitive recreation opportunities will be provided. Small campgrounds are provided to enhance dispersed recreation opportunities. The remainder of the Forest will be managed to provide roaded-natural recreation opportunities. New pedestrian trails will be constructed, primarily in the semi-primitive recreation areas and around campgrounds.

New off-road vehicle (ORV) trails will also be designated. The policy provides for ORVs only on designated routes or trails.

Uncertainty exists about the ability of the Allegheny to provide all of the semi-primitive recreation opportunity described in the management prescription assignments. Future oil and gas development could change the nature of the recreation settings. When intensive oil and gas development occurs in management areas which provide a semi-primitive recreation setting, another management prescription, which is compatible with oil and gas development, may be assigned to that area. We will attempt to make a compensating management area acreage shift elsewhere on the Forest.

Management Problem 3 - Timber Management

Timber on the Allegheny National Forest is a valuable economic resource, especially the many stands of high-value black cherry trees. Historically, much of the timber on the Forest was harvested in the late 1800's and early 1900's. Therefore, most of the timber on the Forest will be mature and ready for harvest during the next two to three decades.

The first management question, then, is what timber volume to harvest during each decade. The second question is how to guarantee that healthy seedlings replace trees harvested. Currently, seedlings are often destroyed by competition with dense understories of brush, striped maple, and beech; by toxins which leach from ferns; and by the many deer that eat seedlings.

Timber Volumes

The National Forest Management Act directs each National Forest to provide total timber volumes that do not decline from one decade to the next. Yet because most timber on the Forest is close to maturity, timber sale

volumes may decline if large volumes are harvested all at once when trees are financially mature (60 to 90 years old). Actually, other management strategies are open to the Allegheny National Forest (ANF). For aesthetic reasons, the ANF could allow trees to grow beyond their financial maturity to a maximum of 120 years old. Such large trees may enhance the appearance of the Forest, but the delay in harvesting would decrease financial returns. For economic reasons, the Forest could maintain non-declining sawtimber volumes, yet still allow total timber volumes (sawtimber plus lower-quality pulpwood) to fluctuate.

Understory Problems

Before trees can be harvested, managers must be assured that seedlings will replace the harvested trees. Two related problems frequently prevent new seedlings on the Forest from replacing harvested trees.

First, deer populations have remained unacceptably high for a long period of time. Because the deer eat tree seedlings, acorns, as well as shrubs and other herbaceous plants, their browsing has altered the natural vegetation on the floor of the forest. They frequently eat enough tree seedlings to prevent the establishment of young tree stands. Seedlings can be protected from deer by fencing and other control measures, but the costs are very high.

Second, an estimated 50 percent of the forest floor on the Allegheny National Forest is covered with a dense understory of fern and striped maple. This understory, combined with excessive deer browsing, is sufficient to prevent the growth of black cherry and other desirable seedlings.

The most effective treatment of this dense understory is to use herbicides to kill the fern and striped maple.

Resolution: Increase timber volumes above current levels. Emphasize financial returns from production of high-quality hardwood sawtimber. A non-declining yield of total timber volume will be provided. First decade sawtimber production will increase 30 percent above the current situation. Even-aged silviculture will dominate, and stands will be harvested at a range of

ages to achieve a non-declining yield of total timber volume. Eighteen thousand acres will receive herbicide treatment in the first decade.

Analysis also indicated that the level of timber harvest and the methods for managing timber are directly related to other management problems, such as access for dispersed recreation and provisions for wildlife habitat.

Management Problem 4 - Wildlife Habitat

The management of wildlife and fish habitats and the regulation of harvest rates to achieve management objectives is a cooperative effort among the Pennsylvania Game Commission, Pennsylvania Fish Commission, U.S. Fish and Wildlife Service, and the Forest Service.

Historically, the Allegheny National Forest has relied chiefly on timber harvests to manage vegetation for wildlife. The regeneration harvest method known as clearcutting allows the regeneration of vegetation crucial for animals requiring young vegetation. As a result, hunters have enjoyed high populations of the white-tailed deer.

The wildife habitat improvement program has been expanding. Management emphasizes habitat improvements for a variety of game and non-game species.

Wildlife concerns are three-fold: (1) deer populations which exceed the capacity of the land to support them, (2) more roads and trails into prime habitat, and (3) level of management emphasis for small-game and non-game species.

Deer Populations

As mentioned in the Timber Management Problem, deer populations on the Allegheny National Forest currently exceed the land's carrying capacity. For lack of food, deer are small and have poor antler development. Deer also eat so many tree seedlings that expensive measures, such as fencing, must be used to protect seedlings until they grow above the deer's reach. Finally, deer have modified the natural understory of the forest, and wildlife species, such as rabbits, dependent upon a rich variety of understory vegetation have declined.

The Allegheny National Forest and the Pennsylvania Game Commission have agreed to limit levels for deer, and progress is being made towards achieving these population levels.

Once the deer populations are nearer to those levels, recovery of the understory vegetation may still take twenty to thirty years.

More Roads and Trails

Roads and trails associated with timber harvests and oil and gas developments have significantly opened up prime wildlife habitat. Such access allows animals to be disturbed during brooding seasons and to be hunted extensively during hunting seasons. Such disturbances are particularly bad for some species -- for instance, the wild turkey. (These wildlife impacts are in addition to those that detract from dispersed recreation, as discussed in Management Problem 2 Providing Dispersed Recreation).

Small-game and non-game emphasis

Some citizens would like the Allegheny National Forest to increase management emphasis on rabbits, squirrels, and grouse, as well as such non-game animals as songbirds and hawks. They are also concerned about the increasing number of black cherry trees on the Forest and their effect on habitat for small-game and non-game.

Resolution: The Allegheny National Forest will continue to work with the State of Pennsylvania to bring the deer herd down to ecologically acceptable levels.

Through application of standards and guidelines, roads through prime wildlife habitat will not be open to the public during critical times of the year. Over 100,000 acres of land have been assigned to management areas in which roads will normally be closed to public travel.

Investments for small-game and non-game habitat are increased substantially above current levels. Habitat will increase significantly for woodcock, ruffed grouse, cavity nesting birds, and several warbler species.

Management Problem 5 - Private Oil and Gas Development

This nation's oil industry began 125 years ago within a few miles of the Allegheny National Forest. To date, 10 percent of the Forest's surface area has been developed for oil and gas production. Extensive oil and gas deposits still underlie the National Forest.

Almost 96 percent of the oil, gas, and mineral rights under the Forest are owned by the private sector. Development timing of these private rights is determined by the owners. The Allegheny National Forest encourages mineral resource development and works cooperatively with the private owners to reduce impacts to surface resources. Reducing the impacts may include such actions as relocating a proposed road to a better route, shifting a proposed drilling site to avoid a sensitive area, or providing stone to surface roads.

Public concern about the effects of the development are high. Oil and gas development requires road access which, if done cooperatively with the Forest Service, often results in lower costs for both parties. Most roads, however, disturb wildlife habitat and opportunities for recreation in a natural-appearing forest. If done improperly, oil and gas development can also cause sediment and chemical pollution of streams and, thus, be harmful to aquatic life and to humans. Development removes timber land from production during the period of oil and gas extraction.

The Allegheny National Forest policy on private oil and gas development is to foster a spirit of cooperation between the Forest Service and the developers to provide both surface and subsurface resource protection and development. In this atmosphere of cooperation, financial benefits are greatest for both parties and adverse environmental effects are reduced. The Allegheny National Forest also works with State and Federal regulatory agencies to ensure compliance with existing laws and regulations.

Resolution: The actual rate of oil and gas development may vary between the low and high demand projections. The Forest predicts the average rate will be closer to high than low.

The Forest Service will not pursue acquisition of subsurface rights across the Forest. Limited acquisition will be pursued in specific areas where

needed to achieve surface management objectives, such as in the Tionesta Research Natural Area; or where Congressionally mandated, as in the Wilderness Areas.

The Forest Service will also continue to work cooperatively with the State and with the U.S. Environmental Protection Agency to ensure waters meet water quality goals.

The Allegheny will mitigate the significant effects of oil and gas development by continuing its education and cooperative approach with the oil and gas industry.

Management Problem 6 - Wilderness

For two decades, people have debated whether areas of the Allegheny National Forest should be designated as wilderness. Such a designation, under the Wilderness Act of 1964, would identify as wilderness those areas possessing unique scientific and research value or unique opportunities for solitude and wilderness recreation.

Two national evaluations have investigated potential wilderness areas -- the first Roadless Area Review and Evaluation, now called RARE I, and then the second evaluation, called RARE II. Under RARE II some 34,358 acres of Forest land were classified according to their wilderness values. Tracy Ridge and the Allegheny River Islands were recommended to Congress for designation as wilderness. Two other areas -- Minister Creek and Hearts Content -- and one island -- Verbeck -- were recommended for non-wilderness, and all remaining areas were identified as needing further planning. These RARE II recommendations were never acted on by Congress.

On October 30, 1984, the President of the United States signed into law the Pennsylvania Wilderness Act of 1984 (Act). The Act establishes the Hickory Creek Wilderness, the Allegheny Islands Wilderness, and the Allegheny National Recreation Area. The Wilderness problem has been resolved for this planning cycle through this legislation. Congress also directed that evaluation of other areas for wilderness is not necessary during this planning cycle.

Resolution: Based on the Act, the Forest will manage Hickory Creek and Allegheny Islands as Wilderness.

C. RESEARCH NEEDS

This section includes the research needs which were identified by the Forest Supervisor, considering the input from other federal, state, and local governments, and universities, as required under 36 CFR 219.7(e). All research needs are subject to approval by the Regional Forester and may be supplemented by additional needs identified during Plan monitoring and evaluation activities.

The following table includes those research needs applicable to the Allegheny N.F. They are in addition to or supplement those included in Chapter 5 of the Eastern Regional Guide.

Table 3-1 Research Needs Analysis

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
Timber		
1. Is the soil compaction/rutting associated with conventional logging systems a long-term problem affecting Forest productivity and regeneration? Background: Timber research has shown that soil compaction can adversely affect site productivity and stand regeneration. The Forest needs to identify soils susceptible to compaction, what causes it, and what conditions slow its development. Results will be beneficial for refining existing management practices.	MEDIUM - Special emphasis needs to be placed on methods of quantifying damage and measuring recovery times.	9.5
2. What is the most economic and biologically feasible method of regenerating Allegheny hardwoods under varying site conditions? Background: The high deer population present on the ANF has created numerous regeneration	HIGH - The Forest Plan calls for regenerating 33,000 acres during the first decade. The PNV of these sales could be dramatically changed as result of this research.	3.2, 3.7, & 3.9

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
problems. Deer have all but eliminated advanced reproductions, and the costs associated with fencing/fertilizations can be prohibitively high. In addition, many sites feature dense understories of laurel, striped maple, hemlock, grass, and fern. There plants are formidable competitors, and some even secrete chemicals which inhibit black cherry seedling growth. What is the effective method for controlling understory species in light of these factors? If we reduce the deer herd significantly, will the regeneration begin to successfully establish itself? We also believe some time should be spent studying the relationship between deer density and understory development of fern and striped maple.		
3. What economic alternatives are available to convert savannahs into highly productive timber stands? Background: There are many old burns and failed regeneration cuts on the ANF which are understocked and contain low-quality trees. Deer density, soil factors, and the allelopathic effects of existing ferns and grasses combine to restrict stand development.	LOW - The total acreage associated with savannah type stands is small. New regeneration practices will minimize its creation. Analysis shows that savannah type stands are not needed to meet timber output objectives.	3.3

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
4. What proportion of low-quality stands are due to stand genetics? Background: There are three primary sources of low-quality stands. 1. Past practices - This includes high grading caused by selective harvesting of the best trees and the leaving of residual culls. 2. Poor inherent site conditions such as soil, aspect, fertility, light, etc, 3. Poor genetic stock. High grading is not a big concern on the ANF because most of our stands have been clear cut. Poor site conditions are definitely a problem and the subject of research proposals 2 and 3. The role of genetics, however, is an unknown factor. We propose that research help to delineate the problem by 1) quantitatively defining the proportion of low-quality stands that are linked to genetics and 2) identifying stand characteristics which may be used by silviculturists to indicate genetics as the causal agent.	LOW - This is a long-term research need. We believe the greatest opportunity for improving stand regeneration and development lies in better understanding local site conditions and their relationship to the species involved.	4.2 & 4.45
5. What are the economic returns and biological effects of conducting intermediate cuts and TSI action immature Allegheny hardwood stands?	HIGH - the Forest Plan calls for 94,000 acres of thinning during the first decade.	3.3

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
Background: The Forest has experienced significantly different results when practicing the same activity on two different sites. We need to know what methods to employ on which sites and when, so as to achieve our desired outcome of tree quality and stand vigor. We also must be aware of any negative effects, i.e., possible stimulation of fern/striped maple, which could affect site management. Current research efforts are directed toward development of a "Stand Growth Simulator."		
6. What is the most economical and biologically feasible method of regenerating oak. Background: Allegheny hardwoods, particuclarly red maple, are severe competitors for oak. It is often present as a minor component in existing oak stands. When these stands are cut, it quickly takes a dominant place in the forest canopy and decreases the percentage of oak in the stand. This can lead to stand conversion. We need some effective, yet economical means for regenerating oak and maintaining it as a major component of the new stand.	HIGH - This was a critical issue with the public in their review of our draft LMP documents. As a result, the Plan was revised to exclude any planned oak conversion from Alternative D. There are few instances where oak can be cut and regenerated without the threat of conversion.	
7. What preventive/remedial strategies are available to deal with insect and disease outbreaks on the Allegheny National Forest?	HIGH - A strong prevention effort may reduce both the frequency of epidemics and the resulting damage. When they do occur, losses are	3.10, 6.3, 7.3, & 7.4

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
Background: The Allegheny hardwood type is susceptible to damage by many pests. Prominent among these are: 1. gypsy moth 2. cherry scallop shell moth 3. cherry trunk rot 4. maple decline 5. ash die-back 6. beech bark disease	often related to the speed and effectiveness of our control efforts. Both types of strategies have large potential payoffs due to the high-value timber found on the ANF.	
FACILITIES		
8. From what source and by what means will the ANF secure its stone needs for future road construction/reconstruction projects? Background: The ANF conducts a large annual road construction/ reconstruction program. One of the primary raw materials is stone/crushed rock. Presently, these needs are being met through a scattered array of stone pits. Conventional extraction involves removal of the softer, upper layers of sandstone. Substantial benefit may be realized if the lower layers could be shot with dynamite and run through a crusher. Research is needed to determine the durability of substrata rock and identify the most economical means of removing the overburden and crushing the hard rock.	HIGH - This project has a high potential payoff in that stone quality may be improved and less acreage disturbed.	--

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
9. What are the long-term effects of adding organic matter and other "fines" to the road surface as a result of grading and ditch pulling procedures? Background: Existing road maintenance procedures call for maintaining a road berm and periodically removing leaves and other material from cluttered ditches. There procedures cause a lot of organic matter and fine silts, sand, and clay to be mixed into the road surface. Research is needed to quantify the problem and determine what long-term effect this mixing will have on road stability, its susceptibility to erosion, and future maintenance/reconstruction requirements.	HIGH - This problem has a high potential payoff.	--
RECREATION		
10. What impact has intensive oil and gas development had on the types and amount of dispersed recreation use occurring on the Allegheny? Background: Oil and gas development has opened up large areas to public access. This development has overwhelmingly favored the motor-oriented dispersed recreationist. Data is needed to help managers evaluate just how significant this shift has been and what problems exist.	MEDIUM - Oil and gas development will continue in most areas. Roads will continue to be built, and our most feasible form of access control is gating.	17.1

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
11. What social, political, and economic impacts can be expected from a reduction in the size of the deer herd? Background: The Allegheny hosts one of the largest deer herds in the Northeast. Recreationists come to hunt and to sightsee, both of which require the sighting of deer to be termed "a successful outing." The Forest Service is currently cooperating with the PA Game Commission in an effort to bring the deer herd down to carrying capacity.	HIGH - This proposal addresses the social, political, and economic trade-offs involved in altering deer populations to bring them in line with the land's carrying capacity.	17.2 & 17.3
12. Where do the Allegheny's dispersed and developed site recreation users come from? Background: Information on the recreation user's home base can help managers to design better transportation facilities, anticipate user needs and desires, and foresee potential problems.	MEDIUM - This type of information is valuable for long-range planning. Most changes/developments involve capital expenditures and take time to develop.	--
OIL AND GAS		
13. What new types of technology can be developed to mitigate the existing adverse impacts oil and gas development has on surface resources? Background: Oil and gas activity on the Allegheny is expanding and 95% of the development rights are outstanding. This means regulatory powers will remain limited,	HIGH - Thousands of acres of high-quality hardwoods are cleared for oil and gas developments each decade.	12.3

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
and the best source of help rests with the development of new technology. Areas needing development include: - Technology to safely and economically dispose of produced brine. - Technology to improve slant drilling techniques to the point that they can economically compete with conventional extraction. - Technology to allow use of deep drilling activities concurrent with shallow well extraction.		
WILDLIFE		
14. What effect will different Forest Forest management practices have on existing bear populations? Background: Bear is a major big-game species on the ANF. Management needs to be aware of the effects certain management practices have on this species if population density is to be maintained at desired levels.	MEDIUM - Current management practices will cause a significant change in habitat over time. Will monitor population trends annually in cooperation with PGC.	--

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
15. What is the relationship between Fall turkey kill and road access. Background: Many acres of the Forest have experienced intensive road development in conjunction with OGM activities and timber sales. We suspect this increased access has had significant adverse effects on turkey populations. In the past, several areas have received overkill during the Fall hunting season. Originally, we attributed this to such on-site conditions as the existence of prolonged tracking snow and poor food conditions, which caused turkeys to congregate. Now, we believe that increased access may be a significant contributing factor. Research is needed to quantify the effects.	HIGH - Turkey populations have dropped to 25-30% of their 1971-1976 levels, and we don't know why. This type of research may give us an answer.	16.4
16. The ANF needs a statistically sound sampling technique to measure wildlife populations and recreation use. Background: 36 CFR 219.19(a)(6) requires us to monitor population trends for indicator species and determine their reaction to habitat changes. At present, the ANF lacks a statistically sound sampling technique for monitoring population trends.	HIGH - We are required to begin this once we implement this Plan.	16.4, 16.5, & 16.7

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
Air, Soils, and Water		
17. What are the relationships between soil types, site productivity, and species composition? Are the soil properties currently used to differentiate soil series and soil mapping units the same as those that differentiate site productivity and species composition? What are the relationships among soil properties, site productivity, species composition, climax community, and successional trends? Background: The Allegheny currently calculates site productivity based upon data derived from the species currently occupying the site. This system is imperfect and wide variances in productivity can occur when different species are inventoried. Another means might be to link productivity to some fixed factor of the land, in this case "soil."	HIGH - Better information on site productivity or species suitability will lead to better silvicultural prescriptions and could improve long-term productivity.	--
18. Are acid deposition or other air pollutants adversely affecting forest resources, such as tree growth or vigor and fish production?	HIGH - If adverse effects are occurring, the long-term ability of the ANF to provide resources may be decreased.	12.8, 14.4, & 14.5

Table 3-1 Research Needs Analysis (cont'd)

PROBLEM STATEMENT AND BACKGROUND	NEED/URGENCY (HIGH, MEDIUM, LOW)	CORRESPONDING RESEARCH NEEDS OF R-9 REGIONAL GUIDE, TABLE 5-2
Background: Tree mortality and loss of vigor has been report in several areas of the East in recent years. Acid deposition and other air pollutants have been suggested as possible causes, although a direct cause and effect relationship has not been established. State agencies have expressed concern that the buffering capacity of streams on the Forest is becoming exhausted due to acid deposition. Some of the most acidic rain in the country has been measured on the Forest. This highly acidic deposition coupled with poorly-buffered surface water and acid soils suggest that, if acid deposition does indeed adversely affect forest ecosystems, the Allegheny National Forest may be susceptible to such damage.		

CHAPTER 4

Management Direction

CHAPTER 4

MANAGEMENT DIRECTION

A. INTRODUCTION

Management direction contains both Forest Direction and Management Area Direction. Forest Direction consists of goals, objectives and standards and guidelines which are applicable to the entire Forest. Management Area Direction consists of the objectives, the associated management practices, and standards and guidelines specific to individual areas of the Forest. The Forest Plan Management Area Map which displays the location of each management area is also part of the management direction. It can be found in the map folder accompanying the EIS and Forest Plan document.

B. FOREST-WIDE DIRECTION

The goals and objectives provide the basis for overall direction regarding the type and amount of goods and services that the Forest will provide. The standards and guidelines contained in the Forest Direction prescribe the conditions that should be maintained on all acres of the Forest while achieving the goals and objectives.

FOREST GOALS

The following forest-wide goals are concise statements describing a desired result to be achieved over the next 10-15 years through implementing the Forest Plan. These forest goals provide the basis for developing the forest plan objectives and the annual development of short-term goals and objectives used for program development and execution.

All goals are to be achieved in the most cost-effective manner. Goals are provided by resource elements.

Recreation

Provide expanded opportunities for developed and dispersed recreation along the Allegheny Reservoir area and along the Allegheny, Tionesta, and Clarion River corridors.

Expand opportunities for semi-primitive dispersed recreation opportunities in the National Recreation Areas and in large contiguous areas within the interior of the Forest.

Promote the use of private capital for construction and operation of a motel and restaurant complex adjacent to Kinzua Beach.

Wilderness

Preserve and maintain the values of Hickory Creek and the Allegheny River Islands Wilderness Areas.

Wildlife

Maintain or increase hunting opportunities for wildlife game species through vegetative manipulation.

Maintain or increase nonconsumptive opportunities for game and non-game wildlife species through vegetative manipulation and maintain habitat for viable populations of all existing native vertebrate species.

Forest Goals

Restore understory to obtain a broader diversity of flora and fauna.

Provide a diversity of fishing opportunities for native trout, stocked trout, and warm water species.

Timber

Provide a non-declining flow of total timber volume.

Increase the sales of high-quality sawtimber, particularly black cherry.

Oil, Gas, and Minerals

Encourage the development and extraction of oil, gas, and mineral resources by integration with National Forest management.

Mitigate adverse impacts created by oil, gas, and mineral operations by working cooperatively with developers and state and federal regulatory agencies. We will also implement our oil and gas handbook direction on development of oil and gas operations.

FOREST OBJECTIVES

Forest Objectives are the planned and projected annual outputs of goods and services which correspond to the achievement of the Forest Goals. These objectives are concise, time specified, and measurable. They form the basis to estimate the management area practices and activities to be carried out. Table 4-1 displays by management problem the significant Forest Objectives planned for the first decade and those projected for decades 2-5. The objectives for decades 2-5 were projections made to display the results of continuing to implement the Forest Plan. However, the Forest Plan will be revised every 10-15 years so these objectives will likely change based on the new issues and problems of the next planning cycle.

Table 4-1 Forest Objectives

Output by Management Problem	Average Annual Amount									
	Planned		Projected							
	Decade 1		Decade 2	[1]	Decade 3		Decade 4		Decade 5	
	D	(D2)	D	(D2)	D	(D2)	D	(D2)	D	(D2)
Developed Recreation Opportunities MRVD[2]										
Semi-Primitive Motorized	37	(37)	38	(38)	38	(38)	38	(38)	32	(32)
Roaded Natural	430	(430)	471	(471)	492	(492)	492	(492)	502	(502)
Rural	419	(419)	432	(432)	450	(450)	485	(485)	485	(485)
Dispersed Recreation Opportunities MRVD										
Semi-Primitive Non-Motorized	30	(30)	42	(36)	66	(65)	73	(72)	61	(59)
Semi-Primitive Motorized	368	(355)	372	(360)	377	(364)	382	(369)	384	(372)
Roaded Natural	499	(406)	525	(406)	550	(406)	582	(424)	598	(433)
Timber Mngmt. MMBF[3]										
Hardwood Sawtimber	38	(37)	46	(39)	57	(51)	59	(57)	65	(62)
Hardwood Pulpwood	56	(54)	48	(52)	37	(40)	35	(34)	29	(28)
Wildlife M WFUD[4]										
Big-Game Hunting	147	(131)	162	(143)	169	(146)	174	(151)	171	(151)
Small-Game Hunting	50	(48)	58	(56)	56	(54)	54	(53)	56	(54)
Non-Game	44	(39)	46	(40)	49	(41)	51	(42)	51	(42)
Fishing	151	(149)	172	(163)	191	(178)	212	(196)	231	(213)

1 D2 is a variation of the Forest Plan that estimates the results if a high rate of private oil and gas development is experienced during implementation.
2 MRVD = Thousands of recreation visitor days.
3 MMBF = Millions of board feet.
4 MWFUD = Thousands of wildlife and fish user days.

FOREST STANDARDS AND GUIDELINES

The following standards and guidelines apply to all management areas across the Forest. They state the bounds or rules within which management practices will be carried out to achieve the planned objectives and requirements. Standards and guidelines applicable to specific management areas are listed by management area in Chapter 4.C.

FOREST-WIDE STANDARDS AND GUIDELINES
(An asterisk designates standards taken from the Eastern Regional Guide)

1600 INFORMATION SERVICES

Information and interpretive programs will attempt to correlate public interests and concerns with resource management direction.

*Work to achieve informed public consent during development of land and resource management plans and programs prior to their implementation.

*Implement a public information and education program in coordination with other public and private organizations to reduce the number, intensity, and cost of conflict-producing and resource-damaging situations.

News releases at the beginning of each season of use will inform the public of recreation opportunities available.

Provide dispersed recreation information in various brochures that list fishing streams, canoeing streams, hiking trails, ORV trails, scenic drives, etc.

Using brochures, posters, and signed provide developed recreation information that lists recreation sites, management practices, rules and regulations.

Provide information on opening and closing dates of facilities, activities offered and whether there are provisions for the handicapped.

1800 HUMAN AND COMMUNITY DEVELOPMENT

*Identify forest and range-related opportunties that will help individuals and local communities enhance their self-sufficiency and their feeling of social well-being.

Individual volunteers and volunteer organizations will be used to assist in management of the National Forest.

*Resource management activities should not preclude the right of American Indians to express and exercise their traditional religion.

Human Resource Program Project work should contribute to accomplishment of National Forest goals and objectives and be integrated into functional program activities.

Human Resource Program Project work should be designed to provide a sense of accomplishment to the participant.

Participants should be helped to develop an awareness of National Forest management in relationship to a quality environment.

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Favor native species when restoring disturbed areas or providing vegetative screening.

Non-native vegetation may be utilized when needed to enhance wildlife habitat. This includes forest trees, shrubs, and herbaceous plants not native to the Forest (such as white spruce, crabapple, crown vetch, and trefoil). Exotic shrubs with persistent fruit may be used in turkey wintering areas to complement existing native foods.

Unique plant communities will be recognized and protected wherever they occur. Their location will be identified on the compartment map for coordination purposes.

When revegetating disturbed areas, choose seed mixtures that achieve both erosion control and wildlife objectives.

In intermediate cuttings, Dogwoods, Hophornbeam, American Hornbeam, Witch Hazel, Serviceberry and other low-growing, flowering, and fruiting trees and shrubs should not be cut. In clearcuts, these species will not be cut unless their presence would preclude adequate regeneration of the desired commercial species. Wild grape areas will be maintained or enhanced in suitable locations.

When thinning, retain species which are minor components of a stand, particularly mast producers.

Retain hickory and black gum in stands where they occur naturally.

NEPA Process

Future environmental analyses (EAs) and environmental impact statements (EISs), will be tiered to the Forest Plan and EIS. Environmental Analyses and/or documentation of project level actions will address the site specific issues and concerns within the scope of the Forest Plan, EIS, and record of decision.

2100 ENVIRONMENTAL MANAGEMENT

Air Quality

If air quality problems affecting forest resources are identified through monitoring resource conditions or through research, mitigation will be sought through coordination with the state regulatory agency.

*Pesticide Use

*Use only pesticides registered by the Environmental Protection Agency (EPA) in full accordance with the Federal Insecticide, Fungicide, Rodenticide Act as amended, except as other wise provided in regulations, orders, or permits issued by the EPA. In addition, certain pesticide uses require Regional Forester approval.

2300 RECREATION MANAGEMENT

Recreation Opportunities

*Road development and management will conform to the appropriate recreation opportunity spectrum class (ROS).

Recreation Sites

The needs of handicapped persons will be considered in the construction and rehabilitation of recreation sites.

Trails

*Management of National Scenic Trails and adjacent lands will be compatible with standards incorporated in the act establishing the trail and in the trail management plan.

*National Recreation Trails will be managed in accordance with the commitments associated with their designation.

The standards and guidelines for each management area will specify which of the following trail types to be appropriate:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

Multi-purpose trails will be encouraged. Trail design may include three difficulty classes to provide a full range of experiences. Emphasis on difficulty may also vary by management area.

Easiest - Accommodate moderate to heavy traffic on a safe and well-marked trail.

More Difficult - Accommodate moderate use on a trail which is safe for those users with backcountry experience and good physical ability.

Most Difficult - Accommodate low volume of users seeking to test their skills in rugged terrain. Route should appear challenging and require good physical conditioning.

Trails will be constructed and maintained to the following design standards. Maximum trail grades vary. Low grade ranges are for the easy class of trails, and the high range is for the most difficult class.

1. Motorized Summer:

   Maximum grades will vary from 15 percent to 50 percent; grades over 25 percent will not exceed 500 feet. Maximum clearing width is four feet, clearing height nine feet, tread width 40 inches.

2. Pedestrian Summer:

   Maximum grades will vary from 20 percent to 50 percent, clearing width 3-4 feet, clearing height 8 feet, tread width 24 inches.

3. Equestrian Summer:

   Maximum grades will vary from 10 percent to 30 percent, clearing width 6 feet, clearing height 10 feet, tread width 24-30 inches.

4. Motorized Winter:

   Maximum grades will vary from 20 to 50 percent, clearing width 9-16 feet, clearing height 10 feet, tread width 5-12 feet.

5. Pedestrian Winter:

   Maximum grades will vary from 10 to 25 percent, clearing width 5-8 feet, clearing height 10 feet, tread width 18-24 inches. Surface will vary from smooth to irregular with obstacles up to 6 inches high.

Off-Road Vehicles (ORV)

These standards apply only to National Forest lands; they do not provide policies to regulate motor vehicle use on the Forest road system. The concepts used to develop the Forest's ORV policy including identification of the five intensive ORV use areas mentioned below are discussed in the USDA-Forest Service Final EIS for Off-Road Vehicles, dated 1977.

Unlicensed ORVs are permitted only on designated ORV trails; all cross-country motorized vehicular use is prohibited.

ORV trail systems will use a combination of constructed trails, roads closed to other highway vehicles, and roads jointly used by ORVs and other highway vehicles.

ORV trails will be constructed and maintained in a permanent location to prevent erosion or impact to natural resources. This does not preclude temporary rerouting to facilitate other resource activities.

In all Management Areas except 5 (Wilderness), cross-country use is allowed for administrative vehicles, emergency vehicles, and use authorized by permit or contract (required by outstanding private OGM rights).

All off-road vehicle use which occurs on roads and ORV trails is subject to Forest Service off-road vehicle regulations and other applicable state and federal regulations.

Five intensive ORV use areas are located on the Forest. All new ORV trail construction is limited to these five areas. Connector trails located outside these areas will be limited

to redesignation of existing system roads. Whenever possible, ORV use within these areas is restricted to designated trails.

Marshburg-Stickney: Bounded on the west by Forest Road 137, on the north by State Route 346, on the south by State Route 321, eastward to National Forest Boundary or western boundary of the Bradford Municipal Watershed.

Westline: Bounded on the west by State Route 321, on the north by Forest Route 122, on the east U.S. Highway 219 to National Forest Boundary on the south.

Highland - Owls Nest - Twin Lakes: Bounded on the north by State Route 948, on the east by Bear Creek, on the south by north line of Warrants 1563-66, and on the west by Forest Roads 343, 344, and 136 along a line projected northward to Chaffee Corners. Twin Lakes is a small separate area around the impoundment and recreation area with National Forest Boundary on the north and Kane Experimental Forest on the south.

Bluejay - Duhring: Bounded on the south by Forest Road 130, on the west by Forest Road 128, on the north by general line from Lynch to Watson Farm to Pig's Ear and south to state Game lands.

Grunderville - Chapman: Bounded on the south by Forest Road 437, on the west by State Route 337 and Lenhart Run Road, southeasterly along a general line to the junction where Forest Road 155 joins the Chapman Dam Road.

Cultural Resources

*Conduct cultural resource surveys and needed evaluations in all areas to be affected by land transfer and earth-disturbing activities and design activities to avoid, minimize, or mitigate adverse effects.

*Forest will schedule the inventory of cultural resources on all National Forest System lands, giving priority to areas with high potential for disturbance.

Interpretation may occur during the evaluation or the excavation of major sites, and the excavation may be featured as well as the findings of the evaluation or excavation.

Interpretive Services

*Information and interpretive programs will explain the correlation of resource management direction and activities with public interests and concerns. Programs will be based on audience analysis, as well as on land managers' needs.

During high use periods, personal contacts with Forest personnel may be utilized to inform users about the Forest environments, its many uses, and their enjoyment of it.

Mobile interpretive and educational vehicles with displays and shows may be utilized at all developed recreation sites. Guided tours, talks, and formal programs may also be utilized in an integrated program to inform, educate, and entertain the visiting public while presenting historical or environmental themes. These tours, talks, and programs may be sponsored by the Forest Service, resort operators, local tourist or historical organizations, or any combination of the above.

Visual Quality

The minimum required visual quality objective of any given activity is "Maximum Modification." Insure that areas in an "Unacceptable Modification" state are upgraded to the adopted visual quality objective. Assign the short-term goal of "Rehabilitation" to these areas during and subsequent to the resource management activity.

Potential Wild and Scenic Rivers

The characteristics that make the Allegheny River, Clarion River, and Kinzua Creek eligible for study and potential inclusion into the National Wild and Scenic River system will be protected through the forest-wide and individual management area standards and guidelines.

2400 TIMBER MANAGEMENT

Harvest Cutting Methods

Harvest practices should be consistent with the objectives stated for each management area and as shown in Table 4-2.

All slopes greater than 40 percent should be considered for a yarding/skidding system which can transport wood products without creating a dense road and skid-trail system.

On "poorly" and "moderately" drained soils, seasonal logging restrictions and/or low ground pressure skidding equipment will be utilized, see 2500 Water and Soil Management text on Soil Groups II and III.

Temporary Openings Created by the Application of Even-Aged Silviculture

A temporary opening is no longer considered an opening when the height of the vegetation in the opening has reached 20 percent of the height of the surrounding vegetation.

Openings will be irregular in shape. Vary opening size and shapes to avoid uniformity of appearance.

Openings will be separated by a manageable stand of at least ten acres. The minimum spacing between openings will be 300 feet; however, they will usually exceed 660 feet.

Table 4-2 Harvest Cutting Methods[1] on the ANF by Forest Type and Management Area[2]

Management Area	Conifer[3]	Aspen	Northern Hdwds	Alleg. Hdwds	Oak
2	SEL[4]	SEL	SEL	SEL	SEL
3,1	CC	CC	SW, CC	SW, CC	SW, CC
5	No Timber Harvest				
6.2	CC	CC	SW, CC	SW, CC	SW, CC
6.1, 6.3, 7,8	Even-aged or uneven-aged silvicultural system may be used, preference determined by management area objective and silvics of species.				
9.1	No Timber Harvest				

1 The harvest cutting methods are clearcut (CC), shelterwood (SW), and selection (SEL). The harvest cutting methods shown in the Table are silviculturally preferred. Appendix D contains a discussion of the rationale for choosing these harvest cutting methods.

2 A small portion of a given management area may be occupied by the forest type not shown in the Table for that management area. An example is a small red pine plantation in the middle of a 3,000-acre area under Management Area 3. The silvicultural system chosen for the minor inclusion will be the subject of specific site analysis.

3 Various conifer species commonly occur as components of stands dominated by other types and are then included in the system for the stand as a whole.

4 Hemlock

Management Intensity and Utilization

For the purposes of determining harvest levels on the Forest, the Regional utilization standards have been modified.

Utilization standards in the following Table 4-3 will apply to all timber sold or otherwise disposed of.

Table 4-3 Utilization Standards
Harvest Level Projections (36 CFR 219.9)

Product Type	Minimum Tree Specifications[5] d.b.h. (Inches)	Length[1] (Feet)	Minimum Piece Specifications d.i.b. at Small End (Inches)	Percent of Gross Measure
Hardwood Sawlogs[2]	11.0	8	9.6	40
Aspen Sawlogs[6]				
Softwood Sawlogs[7]	9.0	8	7.6	40
Hardwood Pulpwood	6.0	8	5.0	70 sound[3]
Aspen Pulpwood[6]	6.0	8	5.0	& reasonably
Softwood Pulpwood	5.0	8	4.0	straight[4]

1 Plus trim alowance.
2 On the Allegheny, tree grading is normal practice; only logs that meet grade 3 or better factory logs are considered sawlogs.
3 Seventy-percent applied to rot, voids, and char. Mechanical type defects, such as sweep, crook, spider heart, and ring shake, shall not be considered.
4 Reasonably straight: When the true center line of a minimum length piece does not deviate more than one-half the inside diameter of the small end, plus one inch from a straight line drawn between the centers of the ends of the piece.
5 A minimum tree must include at least one piece that meets minimum specifications.
6 A market for Aspen sawlogs currently (1984) does not exist. All Aspen will be cruised as pulpwood and offered as Timber Subject to Agreement in the timber contract. Should a market for Aspen sawlogs develop, the Utilization Standards in the Regional Guide for Aspen shall apply.
7 Softwood sawlogs will not be graded.

Stocking Levels

Detailed guidelines have been developed for the three dominant hardwood timber types by the Northeast Forest Experiment Station at Irvine, Pennsylvania. The guidelines, as revised, will aid in analyzing stand conditions and prescribing appropriate silvicultural treatments in the local hardwood types.

Stocking requirements and standards for timber types on the Allegheny are provided in the silvicultural guides listed in the following table.

Table 4-4 Silvicultural Guides for Allegheny National Forest Timber Types

Publication or Manual	Timber Type				
	Aspen	Alle. Hdwds	Northern Hdwds	Oak	Conifer
Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies		EAM[1] UAM[2]	EAM UAM	EAM UAM	
Agricultural Handbook No. 486, Quaking Aspen Silvics and Management in the Lake States	EAM				
Paper No 1439, Minnesota Ag. Exper. Station, Improving Your Forest Land for Ruffed Grouse, S.W. Gullion	EAM				
A Silvicultural Guide for Spruce-Fir in the Northeast, 1973, Frank, R.M. and Borkbem, J.C. U.S.F.S. - N.E.F.E.S.				EAM UAM	
Manager's Handbook for Red Pine in the North Central States, 1977, Benzie, J.W., Technical Report NC-33				EAM UAM	

1 Even-aged Management
2 Uneven-aged Management

Pulpwood

In periods of poor hardwood pulpwood markets, contractual requirement to remove pulpwood may be met by felling the pulpwood trees.

On all timber sales being prepared, consider one of the following options:

1. For clearcuts in Aspen types, make the entire payment unit optional.
2. For clearcuts in mixed hardwood types, make the Aspen component optional.
3. For intermediate treatments, designate Aspen with a symbol and allow optional removal.

If it is determined to treat the Aspen pulpwood size trees by a nontimber sale approach, then site preparation or timber stand improvement may be considered.

Firewood

The Forest will charge for personal use firewood. The minimum charge will be $10/permit but may be greater due to reasons such as current market value, level of administration required to administer and enforce lawful removal, and erosion/sedimentation control costs anticipated following removal.

The size and type of firewood authorized for removal will be clearly stated on the permit.

Firewood areas suitable to meet the needs of special groups, such as elderly and handicapped, will be identified, and such persons provided the information.

It is recognized that exceptions exist that may warrant a free use program. Criteria for such free use will be on a case-by-case basis to meet the following objectives when it is unlikely that the material will be removed under charge permits.

1. Visual quality objective for area warrants reduction of dead/down material.
2. Timber stand improvement or site preparation needs.

3. Reduce insect breeding areas that threaten population buildup.
4. Other justifications approved by the Forest Supervisor.

The District Ranger may issue free use firewood when conditions meeting one or more of Criteria Numbers 1-3 have been identified and documented.

Reforestation

Regeneration practices, such as site preparation, seeding, planting, and fertilization will be employed as needed and will be consistent with the relevant Regional Management Goal. (Appendix D provides discussion concerning the rationale for using these vegetation management practices.)

Natural Regeneration

Make final harvests only from those sites where natural regeneration of desired trees within five years is highly probable.

The primary means of regenerating hardwood timber types will be through natural regeneration if it provides adequate stocking, acceptable species composition, and trees of acceptable genetic quality.

Artificial Regeneration

Artificial regeneration through planting may be done to establish trees in an area where natural regeneration has failed or is not attainable, and/or brings about a conversion or maintenance of forest type(s).

Species planted will be those best suited to the site conditions and be genetically improved stock when available. Soil drainage and planting stock availability may influence species choice.

Stock may be machine or hand-tool planted depending on soil conditions and terrain.

Hardwood seedlings should be at least two feet tall. Planting will normally be done between April 15 - May 30. Generally, 436 seedlings/acre (10 x 10) for hardwoods and 908 seedlings/acre (6 x 8) for conifer are adequate numbers.

Fencing

All hardwood planting areas will be fenced.

Fencing may be either woven wire, electric wire, or nylon mesh.

Fencing may be used to mitigate probable natural regeneration failures.

All regeneration areas must be reforested within five years after timber removal, therefore, fencing to protect seedlings (natural or planted) is a viable alternative in all forest types.

A stocking survey will be used to determine fencing needs. Fencing should be accomplished within one year when a stocking survey indicates a regeneration failure is likely.

Fence maintenance will be done, and removal will occur after the risk of significant animal damage has passed and stand has been certified as established.

Site Preparation

Most sites may require some degree of site preparation for both natural and artificial regeneration.

Site preparation includes removal of unwanted vegetation or slash from the site and/or shaping of the ground surface by mechanical methods or use of herbicides.

Herbicides may be used in timber stands lacking advanced regeneration and containing dense coverage of grasses, fern, numerous beech root suckers, or striped maple stems. The wildlife habitat value of key plants, such as Spring Beauty and Dog's Tooth Violet, that occur on specific sites will be considered in the evaluation process when selecting stands to be treated. Based on research and field trials, glyphosate currently best fulfills all management needs. Individual stand selection criteria and guidelines on application rates, time of year, and methods of application of glyphosate are provided in the Northeast Forest Experiment Station's publication titled "Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies." As information becomes available, other herbicides and/or treatment techniques may be used.

Site specific environmental analyses, which include management requirements, constraints, standards, and guidelines will be prepared. (See Section 2500 Water and Soil Management for buffer strip definitions.)

The use of prescribed fire to control species composition of regeneration in oak stands is being studied by the Northeast Forest Experiment Station at Irvine, Pennsylvania. Any future use of prescribed fire will be based on guidelines to be provided by the Station resulting from the study.

Fertilization

The application of nutrients through fertilization may be done to stimulate or maintain vigorous seedling growth. This permits regeneration to grow above deer browse height in approximately two growing seasons. Fertilizer will be used primarily on the Allegheny hardwood forest type, since other types do not respond well to fertilization.

Nitrogen and phosphorus deficiencies in Allegheny hardwood timber stands can be corrected by the application of ammonium nitrate and triple superphosphate fertilizer. Application of such fertilizer is normally in the spring of the year shortly after leafout.

Nutrient deficient areas are not easily identified but appear to be very common in the Allegheny hardwoods type. The Northeast Forest Experiment Station and the Forest Service Reforestation Handbook (FSH 2409.26B) contain guidelines on:

1. Recognizing nutrient deficiencies.
2. Fertilizer application guidelines.
3. Evaluation of degree of wildlife browsing to assist in deciding whether or not to fertilize.

Harvested areas are generally broadcast fertilized, and individual tree fertilization is done by manual methods.

Buffer zone guidelines for bodies of water, perennial streams, and intermittent streams, are contained in Section 2500, Water and Soil Management.

Precommercial Thinning

Precommercial thinning may be appropriate in those timber stands that have a stocking level of 80% or more and contain a substantial share of their stocking (basal area) in saplings.

Goal should be to remove poorly formed trees and low-valued individuals that threaten the potential crop trees.

Silvicultural guidelines for precommercial thinning are provided in "Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies" publication. (Appendix D contains additional information.)

Non-Commercial Thinning

Non-commercial thinning may be used to remove pulpwood in those instances where the option was not exercised by the timber purchaser.

2500 WATER AND SOIL MANAGEMENT

Best Management Practices

Best management practices for controlling nonpoint source pollution are contained in the Forest-wide and Management Area sets of standards and guidelines in the 2500 section. These practices are to be applied based on evaluation of site-specific conditions.

Riparian Area Management

Riparian areas will be managed under the principles of multiple use and sustained yield. Preferential consideration will be given to riparian dependent resources in riparian areas and in the area 100 feet from either edge of perennial streams and other water bodies. Riparian-dependent resources include, but are not limited to, wildlife habitat, fish habitat, recreation opportunities, and water quality. Riparian areas will be delineated and evaluated prior to implementing any project activity. Standards and guidelines addressing riparian resources other than soil and water are found under those resource headings.

Floodplains and Wetlands

Floodplains and wetlands will be managed in accord with Executive Orders 11988 and 11990, which are designed to protect the values of floodplains and wetlands. In general, management activities in these areas will be consistent with protecting the beneficial values of the areas and protecting public safety. Rehabilitation of existing facilities or construction of new facilities, such as roads and buildings, will only occur in floodplains and wetlands where no practical alternatives exist.

Soil and Water Resource Improvement

Disturbed areas that influence soil productivity or water quality will be evaluated and priority-ranked for restoration. Disturbed areas may include borrow pits, oil/gas developments, debris dams from storm flows, and areas damaged by illegal off-road vehicle use. The first priority for plugging abandoned oil and gas wells in federal mineral ownership will be those wells which pose an immediate safety hazard or are polluting surface or ground water. Watershed improvement projects will be designed so that restored areas meet the resource objectives of the management area.

Priority ranking of water resources improvement projects will consider the use of the water body and source of impact:

Priority	Use of Water Body
Higher	Municipal watershed
	Exceptional Value/Wilderness Trout Streams**
	High Quality/Native Trout Streams**
	High Quality/Stocked Trout Streams**
Lower	Cold Water Fish/Native or Stocked Trout Streams**

**State Water Quality Standard/Type of Fishery Management

Priority	Source of Impact
Higher	Soils and water bodies affected by long-term adverse impacts caused by management practices or natural forces.
Lower	Soils and water bodies affected by short-term adverse impacts caused by management practices or uses.

Soil and Water Conservation

Limitations on management practices and mitigating measures are specified by soil groupings according to internal soil drainage characteristics. Other important soil factors are: textures and amounts of coarse fragments in the surface (A horizons) and subsoil (B horizons);topographic positions; and percent of slope. Detailed interpretations for individual soil types may be found in "Soil Interpretations for the Allegheny National Forest", by L. R. Auchmoody, Northeast Forest Experiment Station, 1984. The following discussion for each soil group reflects an estimate of the amount of land in each group (based on a one percent forest-wide sample).

Soil Group I

Hazelton, Hartleton, Clymer, Chenango, Pope, and Gilpin are the major soils. Approximately 45 percent of the Allegheny National Forest is in this soil group.

These soils are well drained, have no internal drainage problems, and range from fine to coarse textured A and B horizons, with varying amounts of coarse fragments in the soil profile.

- Topographic position and wind exposure should be considered when laying out shelterwood cuts, thinnings, or leaving residual trees.
- Surface area disturbed by logging operations should be less than 15 percent of sale area.
- All containment pits for waste fluids from oil/gas operations must be lined with impermeable material.

Soil Group II

Cookport, Ernest, Philo, Braceville, and Wharton are the major soils. Approximately 46 percent of the Allegheny National Forest contains these soils.

These soils are moderately drained. Most have restrictive layers (fragipans) which create shallow rooting depths, restrict downward movement of water, and create perched water tables. B horizons are fine textured.

- Topographic position and wind exposure must be considered when laying out shelterwood cuts, thinnings, or leaving residual trees. The shallow rooting depths increase the hazard of windthrow.

- A minimum of one of the following Timber Management restrictions will be required:

  1. Conventional rubber tired skidding equipment (p.s.i. of machine alone ranges from 10-16 p.s.i.) will be permitted to operate only during dry periods of the year (typically 6/15 - 9/30) or frozen ground conditions.
  2. Low ground pressure skidding equipment may operate during the entire normal operating season designated in the timber sale contract. Such equipment will have maximums of 7 p.s.i. for the machine itself and 12 p.s.i. for the machine when skidding.
  3. Cable logging systems

- Surface disturbance by logging operations should be limited to 15 percent or less of the timber sale area. Consider winching to avoid surface damage on wetter areas.
- Special surfacing techniques, such as stoning or the use of geo-textiles for corduroying, may be needed on off-road vehicle trails.
- Special construction techniques should be considered for camping and picnic areas to mitigate problems caused by perched water table.
- When locating a site for a vault toilet or a septic system, avoid topographic positions that receive subsurface water which moves down from upslope areas.
- Road construction should be avoided on colluvial soils (Ernest Silt Loam) formed on Devonian shales because of the high hazard of slippage and landslides.
- This group may need geotextiles in road construction to mitigate problems caused by the perched water table.
- All containment pits for waste fluids from oil/gas practices must be lined with impermeable material.

Soil Group III

Nolo, Cavode, Brinkerton, Albrights, Atkins, Rexford, and Armagh are the major soils. Approximately nine percent of the National Forest is in this soil group.

These soils are poorly drained, with most having restrictive layers (fragipans and claypans). The B horizons have high clay content.

- Timber harvesting restrictions are necessary on these soils. Timber skidding equipment will be limited to low ground pressure type models or cable logging systems. Such low ground pressure models will express maximums of seven pounds per square inch (psi) with the machine alone, and 12 psi when the machine is skidding.
- Uneven-aged management should be used on these sites to prevent regeneration failure.
- Scattered residual trees should not be left on these sites due to the high hazard of windthrow.
- These sites are not suitable for recreational developments.
- ORV and hiking trails located on these soils should be built with special surfacing techniques.
- Subsurface water pressure on these sites may dislodge standard toilet vaults and thrust them to the surface. If they must be installed here, use special engineering design to prevent this from occuring.
- Where there is no alternative to constructing roads on these soils, geotextiles will be used.
- Encourage oil/gas operators to use geotextiles in road and drilling pad construction.
- Containment pits for fluids produced from oil and gas operations should not be constructed on these soils due to the high water table.
- If containment pits are built, they must be lined with an impermeable material.

Coordination of Water Resources with Timber Management

Logging systems should be laid out systematically to minimize the number and length of roads needed and to improve the efficiency of the system.

The grade of temporary roads and skid trails should not exceed 15 percent, except lengths up to 200 feet may pitch to 20 percent when sufficient cross-drainage is provided.

Timber harvesting restrictions for poorly and moderately drained soils are provided in the previous text on Soil Groups II and III.

Temporary roads and skid trails will be cross-drained to prevent erosion and sedimentation into streams. After use, all facilities including landings should be permanently closed and erosion-controlled.

Landings located next to system roads may be used for hunter parking or other long-term uses if analysis indicates such a need.

Landings should be located and designed so that sediment will settle out before runoff reaches watercourses. Landings that must unavoidably be located on poorly drained soil types should be used only when the ground is dry or the landing is adequately surfaced.

Bridges, low-water crossings with pipes, or culverts will be provided to cross perennial and intermittent streams.

All temporary fills in stream channels shall be removed in their entirety and the area restored to its original elevation.

Sale layout will avoid, to the extent practical, the need for skidders to cross perennial and intermittent streams. Crossing by skidders will occur only at designated sites. A temporary crossing will be constructed to prevent degradation of stream banks and bed.

No skidding or trucking is permitted down any portion of any stream or streambed.

Concerning perennial and intermittent streams:

- A filter strip should be maintained to minimize the movement of silt, humus, and other organic matter into the stream. A suggested width is 50 feet plus 2 feet for every one percent of slope adjacent to each side of the stream.
- Streams will be kept free of logging debris, sawdust, equipment, oil, and other materials or obstructions that interfere with the orderly flow of water or adversely affect water quality.
- Logging operations should maintain the existing structure and shape of streambanks.
- A canopy of high and/or low shade should be provided along perennial streams. This should protect the streams from excessive exposure to direct sunlight that would increase temperatures above that tolerable to the existing fish species.

No herbicide will be sprayed on any stream or spring seep. The following buffer strips will be established for all spray projects using ground application equipment.

- A 75-foot buffer will be maintained along perennial streams, intermittent streams that have flowing water on the day of spraying, and impoundments or lakes.
- A 50-foot buffer will be maintained along intermittent streams not flowing water, and spring seeps that drain into a stream.
- A 25-foot buffer will be maintained around small seep areas that do not have an outflow channel draining to a stream.

These widths may need to be expanded after evaluation of specific sites, i.e., for steep topography.

During aerial fertilization projects, a buffer strip equal to three-fourths of the swath width will be maintained along streams with flowing water. This buffer strip will generally be in the range of 50 to 100 feet wide.

Coordination of Water Resources with Recreation Management

Filter strips should be provided between ORV trails and streams to minimize the movement of soil into streams. A suggested width is 25 feet plus two feet for every one percent of slope between the trail and the stream.

Trails will be cross-drained to prevent erosion and sedimentation into streams.

In designing trails, segments with steep grades will be located so that eroded material will not enter perennial or intermittent streams.

ORV trails should cross perennial streams via bridges or culverts. Bridges, culverts, or rocked fords where suitable to stream type and topography may be used to cross intermittent streams. In the design of crossings, attention should be given to preventing vehicle use in streams and damage to stream banks.

Locate stream crossings for hiking trails at sites with stable stream banks and stream beds.

Erosion and sediment control practices will be used during construction of recreation sites.

Coordination of Water Resources with Transportation

Filter strips should be provided between new roads and streams. Suggested filter strip widths are:

Surfacing Material	Filter Strip Widths
Commercial clean stone	25 ft + (2 ft x % Slope)
Pit run stone	50 ft + (2 ft x % Slope)
Native material	50 ft + (4 ft x % Slope)

During planning of the reconstruction of existing roads, avoid poorly drained soils (Soil Group III) or segments without adequate filter strips between the road and stream.

For most road crossings, dredge and fill permits issued by the Corp of Engineers under Section 404 of the federal Clean Water Act are not required. Roads not requiring specific 404 permits include local and temporary roads built exclusively for timber management, which are covered by the exemption for normal silvicultural activities; all roads crossing headwater sections of streams (flow less than five cfs), which are covered by a nationwide permit; and minor crossings with less than 200 cubic yards of fill below ordinary high water, also covered by a nationwide permit. Road crossings of streams that do not fit any of the above three categories require a specific permit from the Corps of Engineers.

Discharges of fill material into stream channels to construct a road crossing shall be made in a manner that minimizes encroachment of trucks, tractors, bulldozers, or other heavy equipment into waters of the United States that lie outside the lateral boundaries of the fill itself.

Stream crossings will be designed and constructed to maintain the stream's original gradient.

Stream crossings of trout streams will be designed so as not to impede fish movement.

Ditch erosion and transport of sediment will be minimized by placing sufficient culverts to handle small volumes of water frequently. Cross-drainage will be provided before stream crossings to discharge road sediment onto the forest floor rather than into the stream. Alternatively, sediment traps can be used.

Drainage of culverts onto fill slopes will be avoided where practical. If unavoidable, energy dissipators or water spreaders should be provided to prevent erosion of the fill slope.

Where culverts must drain onto steep slopes and the potential for gully formation exists, energy dissipators will be used.

Cut and fill slopes will be stabilized as soon as practical by revegetating or using other slope stabilizing methods.

During construction, filter fence will be used as needed to prevent sediment from entering water bodies. Trapped sediment and the filter fence should be removed after stabilization is completed.

Coordination of Water Resources with Oil/Gas Management

Developers will provide an erosion and sediment control plan to the Forest Service prior to construction.

Surface disturbance will be limited to the minimum necessary for extraction of minerals, as stipulated by the Secretary's Rules and Regulations governing reserved minerals or by case law concerning outstanding mineral rights.

Road and pipeline systems will be planned to eliminate stream crossings whenever practical. Operators will design and construct stream crossings such that detrimental impacts to the stream are reduced or minimized.

Considerations for road location and design:

- Provide an adequate filter strip between roads and streams to minimize the entry of sediment into streams. A suggested width is 50 feet plus two feet for every one percent of slope between the road and channel.
- Provide adequate cross-drainage to handle small volumes of water frequently. Cross-drainage will be provided before stream crossings to discharge road sediment onto the forest floor rather than into the stream. Energy dissipators will be used where needed to prevent gully formation on discharge slopes. Alternatively, sediment traps that are regularly maintained may be used.
- Road grades preferably should be kept to two to eight percent, with grades up to 15 percent acceptable on short pitches of 200 feet or less.

- Cut and fill slopes should be stabilized as soon as possible by revegetating or using other slope stabilizing methods.
- Permanent roads should be surfaced with sufficient stone to carry anticipated traffic.
- Roads to access test wells should be constructed to minimum standards in order to facilitate site restoration in the event of a dry hole or a decision not to produce. In the event of a decision to produce, the road should be upgraded as necessary for its use.

Within the constraints imposed by the well spacing pattern, locate wells to minimize environmental damage. An adequate filter strip should be provided to minimize entry of sediment into streams.

Use of Forest Roads will require a Road-Use Permit. Road construction necessary to handle the OGM traffic is the developer's responsibility.

In oil/gas developments, pipelines should be buried a minimum of three feet to protect them from damage and freezing. Exceptions may be made if site conditions warrant, such as bedrock requiring blasting. Where Forest Service has approval or permitting authority pipelines will be buried, except where site conditions make it infeasible.

In oil/gas developments under 1911 Secretary's Rules and Regulations or in outstanding ownership, the developer will be encouraged to bury pipelines as described above.

It is the operator's responsibility to comply with all state and federal water pollution abatement laws and regulations.

Each operator must prepare and implement a site-specific Preparedness, Prevention, and Contingency Plan (PPC Plan), which includes a spill prevention, containment, and countermeasure plan, as required by state and federal regulations. This plan details practices for handling, usage, and storage of materials which can cause environmental degradation if spillage, leakage, or discharge occurs.

Wastewaters will be disposed of by methods approved by state and federal regulatory agencies. Disposal of polluting materials must also be in accordance with stipulations of the deed reserving the mineral rights.

All oil storage tanks should be centrally located in batteries whenever practical and kept at least 100 feet from drainages or streams. Batteries will be constructed to meet all federal and state requirements for spill containment.

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife Management

We began the planning process by reviewing the habitat requirements for all species that occur on the Forest. Special emphasis was directed at determining the effects of management on endangered species, species of special concern in Pennsylvania, important game species, furbearers, and non-game species. Management indicator species were selected to represent species having similar habitat requirements. We determined the habitat needed to maintain viable populations for each indicator species (See Table 4-3 in the Final EIS).

We then designed the individual management area objectives and the standards and guidelines to provide specific habitat conditions. Management areas vary in their capability to support each indicator species and associated species. After we developed the alternatives and knew the mix of management areas chosen in each, we evaluated the effects on big-game, small-game, furbearers, waterfowl, endangered species, species of special concern in Pennsylvania, and management indicator species. We found that each alternative provides adequate habitat to maintain viable populations of the species that occur in this area. For more information, see the discussion about wildlife in Chapter 4, Section D of the Final EIS. Table 4-24 displays the Forest-wide wildlife habitat objectives. The land management planning process records contain the habitat requirements for the individual species.

Timber management practices will be used to improve wildlife habitat where feasible. Wildlife habitat improvement practices will be used to provide important components where timber management practices will not achieve our habitat objectives. Old growth timber stands will complement the wildlife habitats that are managed more intensively.

Wildlife habitat management investments should be directed towards the species emphasized in each management area. It should also include opportunities to manage specialized habitats and inclusions to benefit game and non-game species, indicator species, and species of special concern.

All fish and wildlife stocking in waters and/or on lands administered by the Allegheny National Forest shall proceed only after concurrence is obtained from the Forest Service in cooperation with the Pennsylvania Fish and Game Commissions.

Habitat improvements for the species emphasized in each prescription should be designed to meet requirements of as many indicator species as practical.

Management indicator species for the Allegheny National Forest are: American Woodcock, Ruffed Grouse, Red-shouldered Hawk, Yellow-bellied Sapsucker, Pileated Woodpecker, Magnolia Warbler, Hermit Thrush, Black-throated Green Warbler, Great Blue Heron, Barred Owl, Beaver, White-tailed Deer, Rattlesnake, Brook Trout, and Walleye.

Openings

Permanent openings may include savannahs, hawthorne thickets, old apple orchards, old fields, pipelines, utility rights-of-way, American hornbeam stands, and other areas seeded to wildlife mixtures or composed of native vegetation.

Permanent openings will be provided on approximately six percent of the Forest. This will include four percent savannahs and two percent in other types of openings (native shrubs, old fields, pipelines, utility rights-of-way, and areas seeded to wildlife mixtures).

Openings on other private land and State Game Lands will be included in any analysis to determine the need for additional acres in this habitat component.

Higher priority will be given to habitat management on large blocks of National Forest than on small isolated tracts.

Some areas will be managed along selected roads and water shorelines to attract wildlife for public viewing purposes.

Seeding of annual grain crops will be used primarily to establish desirable grasses and legumes.

Openings for wildlife species that are sensitive to disturbances by man will generally be located away from main roadways. Access may be regulated to minimize disturbance.

Openings may be enhanced by release cutting, mowing, pruning, seeding, selective chemical treatment, providing nesting boxes, and prescribed burning. The majority of the acreage in openings will be managed to encourage native grasses, forbs, vines, and shrubs.

Permanent wildlife openings scheduled for mowing will be treated during the period June 15 to July 31.

When feasible, use selective treatment of vegetation (rather than broadcast) on transmission rights-of-way to improve wildlife forage and cover.

Spring Seeps

Protect spring seeps from damage by resource management activities.

Locate haul roads at least 50 yards downstream from the head of the seep and avoid road construction within 50 yards uphill from seeps. Use appropriate erosion control methods to minimize the movement of silt into the seep.

Manage seeps intensively only where vegetative productivity is likely to be greatest and winter food is needed most.

- Select seeps with consistent flows, a surface area greater than 40 square yards, near neutral or above water pH, and relatively high soil fertility.
- Seeps should be located in traditional winter habitat for deer and turkeys.
- Combine vegetation management with commercial logging to reduce treatment costs.
- Cut all trees back at least 20 yards from the seep except for small food producing species.
- Do not cut food producing shrubs.

Manage the timber adjacent to other seeps by using intermediate cuttings. Favor mast-producing crop trees.

Remove all slash and logs from the seep channel and clearings that are created.

Thermal Cover

Native conifers, rhododendron, and mountain laurel should be used to provide thermal cover.

Conifer cover will be provided on a minimum of five percent and a maximum of 10 percent of the Forest. Conifer stands, as well as mixed hardwood-conifer stands, can be managed to achieve this wildlife management objective. Special emphasis will be given to hemlock where feasible.

White spruce may be used to provide thermal cover in areas where it is not feasible to use native species.

Snags

A snag can be either a dead tree or a live tree with a dead crown or major dead limbs. Wildlife will use a wide variety of tree species. High value timber species should not be designated as snags, except where salvage sales are not feasible.

Some snags should be left standing in all commercial and non-commercial cuts. Where the potential exists, leave an average of five to ten snags per acre. In clearcuts, snags will be left primarily in hollows and along stand borders where they will be less subject to blowdown. Refer to the guidelines in the 1900 section for each Management Area for more specific direction.

Den Trees

As part of the requirement for providing old growth habitat, retain in intermediate cuttings up to three trees per acre with nesting cavities unless the guidelines for the Management Area exceed the forest-wide guideline. Where an inadequate number of live trees occur, retain old large trees, especially those with old wounds and broken limbs.

In clearcuts, leave small clumps of 6-15 trees with nesting cavities, trees with the potential to produce nesting cavities along with adjacent conifers and mast-producing species. These clumps should be left in hollows and along stand borders where they are less subject to blowdown. Where this is not feasible, retain a clump of approximately 75 trees (1/4 acre) within each five acres of regeneration cut. The clumps should not exceed five percent of the area to be regenerated.

Wetland Impoundments and Potholes

Water levels in selected impoundments will be manipulated for management purposes. Impoundment designs will include water level control features.

Propagation Areas may be provided on selected impoundments in cooperation with the Pennsylvania Game Commission.

Seeding of annual grains adjacent to selected shorelines will be permitted.

Potholes should be constructed only where they complement existing developments, such as small impoundments.

New shallow impoundments and potholes shoudl be developed only in areas where poorly or very poorly drained soils occur.

Consider utilization of road construction projects to develop shallow water areas.

Islands and peninsulas may be provided for nesting and loafing areas.

Cover should be provided within and adjacent to impoundments for escape and nesting purposes respectively.

Nesting Structures

Nesting boxes may be installed in wetland habitats.

Canada goose nesting structures may be provided in impoundments.

Beaver

Beaver will be encouraged on selected streams (non-trout) where stream gradient and food availability are suitable.

Specialized Habitat

Areas with rock ledges suitable for raven nesting sites should be identified and managed in a manner that will protect these areas.

Road and Trail Development

Road and trail development will be located to protect key wildlife habitat values (turkey brood habitat, deer and turkey wintering areas, wetlands, etc.)

Fish

The Forest will maintain and restore fish population balance to the extent practical through habitat and access manipulation. Population manipulation as coordinated with the Pennsylvania Fish Commission will be used when necessary.

Permit and maintain protected stocking areas on all stocked trout streams within the Forest which comply with Pennsylvania Fish Commission's policy and directives.

The following streams will be managed to reasonably conform to Wilderness Trout Streams according to Pennsylvania Fish Commission Policy No. 400-17-69. All management areas are considered compatible with the policy.

- Arnot Run, Warren County
- Crane Run, McKean and Elk Counties
- East Hickory Creek above its confluence with Middle Hickory Creek, Warren County
- Four Mile Run, Forest County
- Wildcat Run, Warren County

Stream flows should not be impeded or accelerated nor fish passage restricted unless prescribed under a fish management plan.

Refer to 2500 Water and Soil Management and 2600 Wildlife and Fish Habitat Management for each Management Area for additional standards and guidelines to protect water quality, stream temperature, and fish habitat.

If warm water impoundments are constructed:

- They will be 25-100 surface acres in size.
- They will be located where at least 65 percent of the impoundment will be at least five feet in depth.
- They will not be located in drainages whose pH is less than 6.0 unless the liming and fertilization of that lake is accepted as part of the project costs.
- Drainages with a total hardness of at least 25 p.p.m. as Calcium Carbonate will be selected first.
- The impoundment design will include a reasonably rapid drawdown capability.
- An environmental assessment will be made for each site proposed for a warm water impoundment to insure that the project will be cost-effective and comply with all the Forest standards and guidelines.

- Downstream temperatures will not be affected adversely.

Habitat Improvement in Allegheny Reservoir

Habitat improvement structures for the Allegheny Reservoir will be of two general types. The first will be brush piles constructed of trees or bushes. They will be anchored or otherwise fastened in place along shorelines to promote spawning habitat and/or cover. Shallow bank areas will be selected at roughly one mile intervals around the shoreline. Each area selected may have up to one dozen structures. The second type will be constructed from automobile tires, tiles of various diameters, concrete culverts, or other like items. These items will be cabled together with material designed to resist rust and placed in the lake at approximate elevation 1,300 MSL. Several structures may be placed in one location, generally near access points so that bank fishing will also benefit.

Endangered, Threatened, and Forest Species of Concern

The habitat requirements of all animal and plant species that are listed or proposed for listing as endangered, threatened, or of special concern in Pennsylvania were considered in developing the Forest-wide standards and guidelines, as well as those for specific management areas. Most of the species of concern can be protected and their habitat requirements provided by these standards and guidelines. Some species, however, need additional considerations for various reasons to insure that viable populations will be provided on the Forest. The following species were selected in cooperation with the Pennsylvania Game Commission; Pennsylvania Fish Commission; Pennsylvania Department of Environmental Resources, Bureau of Forestry; and Western Pennsylvania Conservancy, to receive special emphasis in the management program. A complete listing of animals and plants and their classifications by the responsible state agency is on file in the Forest Supervisor's office.

Endangered

Bald Eagle (Haliaetus leucocephalus)
Indiana Bat (Myotis sodalis)*

Forest Species of Concern

Osprey (Pandion haliaetus)**
Henslow's Sparrow (Ammodramus henslowii)***
Cooper's Hawk (Accipiter cooperii)
Red-shouldered Hawk (Buteo lineatus)
Northern Goshawk (Accipiter gentilis)
Sharp-shinned Hawk (Accipiter striatus)
Grasshopper Sparrow (Ammodramus savannarum)
Marsh Wren (Telmatodytes palustris)
Eastern Bluebird (Sialia sialis)
Great Blue Heron (Ardea herodias)
Raven (Corvus corax)
Bobolink (Dolichonyx oryzivorus)
Bobcat (Lynx rufus)
Keen's Little Brown Bat (Myotis keenii)
Silver-haired Bat (Lasionycteris noctivagans)
Timber Rattlesnake (Crotalus horridus)
Small-headed Rush (Juncus brachycephalus)
Broad-leaved Water Plantain (Alisma plantago-aquatica)
Puttyroot (Aplectrum hyemale)

*Though this species has not been recorded as occurring within the Allegheny National Forest, its historic and suspected range includes this area. Old growth habitat in riparian areas preferred by this species for nursery colonies will be provided through implementation of the standards and guidelines as well as the management area assignments.

**This species is classified as Endangered by the state and is a migrant. It has attempted to nest here recently. A hacking project is underway on the Allegheny Reservoir in New York.

***This species is classified as Threatened by the state and occurs on private land within the proclamation boundary.

The small-whorled pogonia (Isotria medeoloides), that is classified as Endangered on the federal list, was not included on the Forest list because it has not been known to occur on this unit historically. Since a population of this species has been located recently in Venango County near Oil City, Pennsylvania, within the general region of the Forest, the guidelines for locating this species will be utilized to protect it.

The standards and guidelines included here are designed to complement those in other sections of the Plan. They will provide additional assurance that the aforementioned animal and plant species and their habitats will receive special consideration during the planning and execution of management activities on the Forest.

The federal and state lists will be reviewed at least once annually, and the Forest list will be revised as deemed necessary in cooperation with the Pennsylvania Game Commission, Pennsylvania Fish Commission, and the Pennsylvania Department of Environmental Resources, Bureau of Forestry. Amendments to the current standards and guidelines will be based on any modification of the Forest list and on any new management techniques that are developed.

Habitat of endangered, threatened, and Forest Species of Concern will be protected or enhanced.

The Forest will carry out National Forest responsibilities in Recovery Plans for federally threatened and endangered species and will develop management plans for all federal and state threatened and endangered species, except for migrants or visitors, that are essentially unaffected by management of the Forest. Direction will include the following requirements:

1. Cooperate in re-introduction programs if deemed appropriate by state agencies.
2. Assess the occurrence of animal and plant species in all areas to be affected by land adjustment or resource management activities, and design action to avoid, minimize, or mitigate potential adverse effects.
3. Acquire lands or rights needed to protect or reestablish threatened or endangered species of animals or plants.
4. Protect specific key habitats and specialized habitats through coordination with other resource management activities or area closure.
5. Provide desirable nesting vegetation for the marsh wren within and adjacent to wetlands.
6. In wildlife openings provide trees with suitable nesting cavities for bluebirds, or install nesting boxes.
7. Enhance rattlesnake denning and basking sites by release cutting.
8. Identify and manage potential nest trees in suitable locations for the bald eagle and osprey.

9. Construct nesting platforms for ospreys where suitable nest trees are lacking but habitat is otherwise appropriate.
10. The guidelines to protect selected birds during the nesting season are the following:
    - Prohibit disturbances within approximately 330 feet of each existing nesting location, except those necessary to protect the nest or colony.
    - Prohibit significant changes in the landscape within 660 feet of each existing nesting location.
    - Restrict management activities* that result in adverse disturbance to nesting birds within approximately 1,320 feet of each nest location.
    - Local roads will be closed to public use where active nests are located.

The species included here and their critical time periods are the following:

Bald Eagle - February 1 to July 31
Osprey - May 1 to August 15
Cooper's Hawk - March 1 to July 31
Red-shouldered Hawk - March 1 to June 30
Northern Goshawk - April 1 to July 31
Sharp-shinned Hawk - April 15 to August 15
Great Blue Heron - March 1 to August 31
Raven - February 1 to May 15

* Includes road and trail construction and maintenance, timber cutting and hauling, oil and gas development (where possible), right-of-way management, etc.

11. Manage selected permanent openings in desirable vegetation types to provide habitat for the Henslow's sparrow, bobolink, grasshopper sparrow, and bluebird.

12. New roads, trails, recreation facilities and other developments will be located to avoid the following:

    - Rock ledge areas suitable for raven nesting sites
    - Rocky areas on southern and southeastern exposures suitable for snake dens
    - Caves or rock outcrops with crevices suitable as hibernaculums for the Keen's little brown bat and silver-haired bat

- Existing nesting locations for Henslow's sparrow, Cooper's hawk, red-shouldered hawk, northern goshawk, sharp-shinned hawk, great blue heron, and raven
- Potential nesting sites for the bald eagle and osprey
- Habitats where the small-headed rush, puttyroot, and broad-leaved water plantain are present

13. Field surveys will be conducted to determine the presence of small-whorled pogonia populations when road construction, logging, herbicide treatment, trail construction, recreation site development, and oil and gas development are proposed for areas containing suitable habitats for this species.
14. Prior to issuance of a general botanical collection permit, individuals will be notified of the state regulations, Chapter 82, "Conservation of Pennsylvania Native Plants." The collector will be given a list of the plant species of special concern as they are contained in the state regulations and notified of the special provision for the collection of Pennsylvania endangered and threatened plant species through the wild plant management permit application procedures.
15. The Forest will not pursue a bald eagle hacking project during the first plan period based on consultation with Pennsylvania Game Commission wildlife biologists. If another organization or agency decides to initiate one based on additional data, we will cooperate to the extent possible through habitat management and coordination with other resource management activities. Our current objective is to establish one nesting pair of bald eagles on the Forest by the year 2020.
16. Coordination with other resource management activities:

    Timber

    Manage the existing timber stands as old growth where great blue heron colonies are located.

    Retain as potential great blue heron nesting areas mature or old growth timber stands where American beech is a major component. These stands should be located near existing colonies when possible and should occur in similar locations.

Herbicides will be applied in a manner to avoid any adverse effect on the plants listed in this section of the Plan.

Refer to items 2, 4, 10, and 13.

Recreation

Existing ORV and foot trails will be managed to avoid conflicts between the public and "Species of Special Concern in Pennsylvania". As an alternative, the trail will be relocated to provide the protection required for these species. Refer to items 2, 4, 10, 12, and 13.

Transportation Planning and Road Management

Local roads will be closed to public use when necessary to provide additional protection for the bobcat and rattlesnake. Refer to items 2, 4, 10, 12, and 13.

Special Use Permits

Provisions will be included in special use permits to protect "Species of Special Concern in Pennsylvania". Refer to items 2, 4, 10, 12, and 13.

Land Acquisition

Refer to items 2 and 3.

17. The Forest will cooperate with other agencies and organizations interested in conducting special surveys concerning these species and other species that may occur here.

The U. S. Department of Interior, Fish and Wildlife Service, has reviewed the Land and Resource Management Plan, as required under the Federal Endangered Species Act (PL93-205). Their opinion is that "the management plan will not jeopardize the continued existence of the bald eagle." This agency's complete reply is on file in the Forest Supervisor's office.

The Pennsylvania Game Commission, Pennsylvania Fish Commission, and Pennsylvania Department of Environmental Resources, Bureau of Forestry, have reviewed the Plan and concur that it provides adequate direction to protect or

enhance the habitat of "Species of Special Concern in Pennsylvania." Their letters of concurrence are on file in the Forest Supervisor's office.

2700 SPECIAL USE MANAGEMENT

Permittees must meet the same environmental standards that apply to Forest Service facilities.

The burden of proof is upon the special use applicant to justify need for use of National Forest lands.

The establishment of commercial and tourist service facilities will be considered where private lands are not available for such development, and where development on federal lands can be demonstrated to provide a service fulfilling a public need beyond the state and local context.

Cabin permits on National Forest land will be terminated prior to December 31, 1996. Recreation residences in established areas will be reviewed and phased out prior to December 31, 1996, when such action is in the public interest.

Consolidate right-of-way uses into use-corridors whenever practical. Locate utility corridors to avoid heavily used recreation areas and special ecological or other special interest sites.

Special use permittees will be required to bury all new pipelines, telephone lines and powerlines up to and including 34.5 KV, except those to be placed on existing poles or towers.

Forest Supervisor may approve exceptions when:

- The applicant provides evidence that burying the utility line is not feasible; and/or,
- An environmental assessment of the alternatives supports the exception.

All rights-of-way except continuously used road surfaces on National Forest land should be stabilized through seeding or other natural means.

Cooperative trout nurseries operating under special use permits from the Allegheny National Forest shall receive prior approval from the appropriate agency before planting trout in waters on the National Forest.

2800 MINERALS AND GEOLOGY

Federal Minerals

Exploration

*All lands will be available for exploration that does not disturb the land surface.

Most lands outside the National recreation areas and wilderness will be available for surface-disturbing exploration (including core drilling).

*The reasons for closing an area to land-disturbing exploration must be supportable and documented.

Development

The Forest Service will encourage inventory and development of federal minerals, especially minerals of compelling domestic significance, as defined by the U.S. Department of Interior. Developments will be designed, constructed, and operated in a manner that is compatible with the surface resource objectives of the management area.

Compatibility determination for the Federal oil and gas ownership will be by an Environmental Assessment. A similar compatibility analysis will be done for oil and gas properties acquired by the federal government in the future.

Federal minerals within the Wilderness Area and the National Recreation Areas were withdrawn from leasing by the passage of the Pennsylvania Wilderness Act of 1984.

Private Minerals (includes oil, gas, and minerals outstanding or reserved in deeds)

*Land management decisions must not preclude the ability of private mineral owners to make reasonable use of the surface, as defined by deed and public law.

The Forest Service will protect the rights of the federal government, respect private mineral rights, and insure that private mineral owners and operators take reasonable and prudent measures to prevent unnecessary disturbance to the surface.

Forest Service administration of outstanding and reserved mineral rights will be in accordance with deeds, mineral reservations, and state and federal laws.

Actions required of mineral operator by law, mineral reservation, or contracts

At least 60 days in advance of proposed development, the developer will provide the Forest Service with written notification of planned activities. The advanced notification will contain the following:

1. Proof of Ownership
2. Designated Field Representative
3. A map showing the locations and dimensions of all facilities.
4. Plan of Operation, including drilling and construction schedules
5. Erosion and Sedimentation Control Plan
6. State Drilling Permit

1. Proof of Ownership

   The developer will demonstrate the right to develop the mineral estate by providing copies of deeds, leases, and farm-out agreements.

2. Designated Field Representative

   The operator will provide the name, address, and phone number of a designated field representative. The representative will be familiar with all phases of the project.

3. Map of the Planned Development

A map will be provided showing locations and dimensions of all facilities. These facilities include well sites, tank batteries, utility and collection lines, storage areas for equipment and supplies, generators, compressors, meters, and other facilities necessary for production or operation. The size of the well sites will be the minimum needed for safe operation.

4. Plan of Operation

The Plan of Operation will include a schedule of construction and drilling activities. This schedule will include the beginning and ending dates for timber harvest, road, well site, and other construction, and the drilling, hydrofracturing, and completion of wells.

5. Erosion and Sedimentation Control Plan

A site-specific plan to minimize erosion and prevent sedimentation of streams will be developed by the operator.

The emphasis of the plan should be to prevent erosion and contain soil on the site of the disturbance rather than collect eroded soil at the stream's edge.

6. Drill Permit

The operator will provide the Forest Service with a copy of the state drilling permit.

In addition to the above items, the operator must comply with the following:

- All abandoned wells will be plugged, according to state law.

- Roads will be gated and will be used only for oil and gas production and Forest Service administration.

- All merchantable timber will be sold by contract, with timber marked by the Forest Service and paid for prior to cutting. Slash from clearing roads, well sites, and other areas will be kept out of springs, seeps, and streams. Timber should not be skidded across streams.

- Unused pipelines, tanks, well jacks, and other miscellaneous equipment will be removed from National Forest land.

- Special use permits will be required for any facilities which cross the mineral estate of a different mineral owner or separately created mineral estates.

- Use of Forest Service roads will require a Road Use Permit, with payment of maintenance fees.

Actions negotiated with mineral operators

The Forest Service works cooperatively with oil and gas developers to mitigate adverse impacts on surface resources.

Standards and Guidelines in 2500, Water and Soil Management, are used to mitigate effects on water quality and soil productivity. The following recommendations and guidelines are routinely used by the oil and gas operators to reduce the impact of developments on other surface resources:

The road system will be located and designed to minimize environmental and visual impacts.

Road surfacing, including stoning and use of geotextiles, will be required as needed.

The grade of permanent roads will be between two and eight percent, with grades up to 15 percent acceptable on short pitches of 200 feet or less.

Right-of-way clearings will avoid den and unique mast producing trees wherever possible (See 2600 section).

Road rights-of-way clearings will be limited to the minimum width necessary to safely carry the anticipated traffic.

All pipelines and electric lines should be buried a minimum of 36 inches deep. All utility lines, whether buried or on the surface, should follow road rights-of-way wherever possible to minimize conflict with surface management activities and to protect the lines.

Automatic pump jacks should have warning signs to alert the public to machinery hazards. Storage tanks should have warning signs to restrict open flames near flammable materials.

Pump jacks and storage tank installations should be designed to blend with the natural environment.

Additional guidelines are developed for resource conditions on specific sites during the cooperative planning of development projects.

Compliance with regulatory requirements of other agencies

Oil and gas operators must comply with applicable state and federal laws and regulations governing oil and gas operations. The Forest Service will work cooperatively with U. S. Environmental Protection Agency, Pennsylvania Department of Environmental Resources, and other concerned agencies to ensure such compliance.

Mineral Materials (stone and gravel)

Use of construction mineral sources (pits and quarries) should conform to an Implementation Plan prepared for each source.

On all contracts, permits, and other uses, the user should have an operating plan for the production of a given quantity of mineral materials. The operating plan will conform to the long-term Implementation Plan for the designated source.

The ranking for allocations of rock from National Forest lands will be (1) for Forest roads and trails and for exercise of valid private minerals rights on National Forest land; (2) to federal, state, counties, and municipalities for off-Forest use; and (3) to a private corporation, organization, or individual for off-Forest use.

Ground Water

Protection of the ground water from oil, gas, and brine pollution will be a top priority in the administration of both federal and private oil and gas developments. All project planning, including environmental analysis as applicable, will consider potential impacts on ground water and preventive measures.

The Forest Service will request state review of well hole construction and completion plans and practices through Preparedness, Prevention, and Contingency Plans and by other appropriate means.

The Forest Service will encourage oil/gas developers to use the best available technology in well hole construction, completion, and production operations to protect ground water.

All injection wells will be permitted under the Underground Injection Control section of the Federal Safe Drinking Water Act.

3400 FOREST PEST MANAGEMENT

Integrated Pest Management

*Use integrated pest management methods to minimize or prevent the development of pest problems. Where pest problems are unavoidable, select the solution that provides the most beneficial method, based on objectives, effectiveness, safety, environmental protection, and cost.

Reporting incidence of damaging Forest pests will be the responsibility of all field-going ANF employees.

Systematic detection to locate and map pest populations and their damage will be provided by Forest Pest Management (FPM).

Biological and/or damage evaluations to assess current extent and future trends in resource losses will be provided by FPM.

The preparation of specific analyses may be necessary, based on FPM recommendations, to take suppression action to control insect and disease problems. Such analyses will consider the management objectives and standards and guidelines of the concerned management area(s).

Development of impact evaluations on how losses interfere with flow of goods and services will be responsibility of the Forest Supervisor.

Selection and implementation of the suppression or prevention alternative deemed most appropriate to mitigate Forest pest impact will be the responsibility of the Forest Supervisor.

The use of biological control tactics in suppression and cultural control tactics in prevention should be encouraged.

Monitoring and evaluation of Forest pest management suppression/prevention activities will be conducted in such a way as to quantify performance, document procedures and compare costs so as to improve on future activities.

Forest Insects

Hardwood defoliators represent the greatest threat and will receive the greatest management emphasis.

Minimize thinnings and salvage cutting of storm damaged conifers during the summer to reduce bark beetle buildup in slash, tops and downed stems.

During warmer months, encourage rapid utilization of cut trees.

Tree Diseases

Removal of defective trees with conks and cankers will be emphasized, except as required to meet wildlife objectives.

Beech bark disease complex now occurs on the northern part of the ANF. In threatened stands, consider favoring species other than beech when selecting crop trees during commercial and noncommercial intermediate treatments, except where beech is required to fulfill wildlife objectives.

Physical Factors

Promptly evaluate significant timber damage from ice, wind, etc., storms for salvage potential. In all management areas, except Management Area 5.0, a specific environmental analysis will be done as soon as possible.

Initiate timely salvage of damaged and downed stems where economically feasible.

Hazard analyses for recognizing the potential of tree failure and its human health and property damage consequences should be conducted in all developed recreational areas by Ranger District personnel every two years.

Lower bole damage from logging using selection or thinning cut methods should be minimized by reducing the number of skid trails and entries into the stand.

4000 RESEARCH

Identify candidate research natural areas in the Allegheny Hardwood (cherry, red maple, ash, poplar) and silver maple-sycamore timber types.

5100 FIRE MANAGEMENT

*Agreements for fire detection and suppression on National Forest System lands by cooperating firefighting agencies must define suppression action that will be commensurate with established resource management prescriptions and fire suppression action plans.

In all management areas except 5, wildfire prevention, detection, and suppression, and fuels management, (including fuelbreaks and hazard reduction), will be planned based on an analysis of probable fire location, expected fire intensities, potential net resource value change, and risk to health and safety. This type of analysis is performed on an annual basis and fire plans updated accordingly. See 5 for appropriate fire standards and guidelines.

A Cooperative Agreement will be maintained with the Commonwealth of Pennsylvania which defines the prevention, detection, and suppression actions.

Prescribed fire may be used to maintain and/or enhance wildlife habitat under established management prescriptions.

Prescribed fire for other than wildlife and fuel reduction purposes will only be considered after research studies determine its (prescribed fire) suitability on ecosystems common to the Allegheny National Forest.

5300 LAW ENFORCEMENT

*Adjust Cooperative Law Enforcement agreements in accordance with tri-year evaluations of Forest law enforcement needs and quality of service available.

*Law enforcement will be commensurate with frequency, severity and types of violations committed.

*At all facilities, apply recommended security measures that are cost efficient in relation to risk and value of potential loss.

"The objective of the law enforcement program is crime prevention and compliance with applicable laws and regulations, general protection of the public and their property, protection of Forest Service employees and protection of Forest resources and property."

"The Good Host concept will be applied in all law enforcement situations, which includes education and cooperation."

"The Forest will acquire and utilize the necessary resources and manpower to redeem their law enforcement responsibilities in the most effective and efficient manner. This may include the use of cooperating Federal, State, and local law enforcement officers."

5400 LAND OWNERSHIP

Surface Ownership

Lands may be acquired that could reduce management costs and improve management efficiencies. These lands are typlified by small (100-200 acre) tracts that are scattered throughout the Forest.

Rights-of-way will be acquired to facilitate efficient movement of goods and to supply services.

The following priorities will exist for lands acquisition:

Priority*	Description
1.	Lands or rights that would become part of a designated wilderness
2.	Lands or rights that are needed to protect or re-establish threatened or endangered species of plants or animals.
3.	Lands or rights that are needed to implement direction in Management Area 8
4.	Lands or rights that are needed to implement direction in Management Area 7
5.	Acquire the lands in the Tionesta Creek and Clarion river Valley corridors by exchange, purchase, or donation. Purchases will be primarily on a willing seller basis.
6.	Lands or rights that would become part of Management Area 3 or 6
7.	Lands or rights that would become part of Management Areas 1 or 2.
8.	Lands or rights that would become part of Management Area 9.

*Subsurface Ownership

*Consider subordination or acquisition of subsurface rights when all of the following are met:

1. Conflicts between surface values and mineral activities cannot be mutually resolved.

2. The public benefits from the surface values exceed the cost of acquiring subsurface rights.

3. The cost is consistent with budget priorities.

7100 ENGINEERING OPERATIONS

Signs and Posters

Signs and posters will be designed, installed, and maintained to ensure safe and efficient travel and education of the forest visitor. They will be aesthetically pleasing, assure adequate orientation to the forest visitor, and where possible, carry a positive message. Minimum signing to meet these needs will be stressed. Traffic control signs will be designed, located and installed in accordance with the latest "Manual on Uniform Traffic Control Devices" (MUTCD).

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	*Solid Waste *Refuse generated or deposited on National Forest System lands should be disposed of through community or area-wide systems that meet federal regulations. Waste Water Waste water systems will meet laws and regulations established by federal, state, county, and local agencies. Large, efficient disposal systems operated and managed by municipalities or county governments will be encouraged. Sanitary Landfills The sanitary landfill method is available for waste disposal on National Forest lands only when there are no suitable sites available on private land in the area. It is not appropriate in management areas 5, 6.2, 6.3, 6.4, 7, and 8,
7500 WATER STORAGE AND TRANSMISSION	Dams Impoundments will be designed, constructed, and maintained to meet laws and regulations established by federal, state, and local agencies.
7700 TRANSPORTATION SYSTEM	Arterial and collector roads will be managed as Traffic Service Level "A to C" roads, open to the public with only limited restrictions on use due to structural deficiencies. Forest Service administered local roads will be managed in accordance with the objectives of the management area served. The range of traffic service levels appropriate for local roads to meet the objectives of each management area are specified within the standards and guidelines for each management area. As deemed appropriate, right-of-way easements will be issued. Airfields and helipads may be developed as needed for private or other governmental agency needs, after completion of the proper environmental analysis.

When planning the road system, if the management area objectives and the environmental constraints can be met, take advantage of existing road corridors in order to minimize additional land clearing.

Use on any Forest Service administered road can be restricted for structural reasons or for protection during spring breakup .

Roads under the jurisdiction of an oil and gas operator are not open to public traffic, unless a formal written agreement is reached between the OGM operator and the Forest Service for this use. The only uses allowed on oil and gas roads, without the agreement specified above, are administrative traffic by the oil and gas operator and the Forest Service.

Direction for coordination and standards on road location, construction, reconstruction, and management for wildlife, fish, threatened and endangered species, species of special concern in Pennsylvania, recreation, timber, soil, and water are included within their respective headings. Road management direction in these other sections will supercede direction under the 7700 section.

Unlicensed ORV's can only be used on closed roads designated for ORV use only.

C. MANAGEMENT AREA DIRECTION

The following section describes the direction for individual areas of the Forest called management areas. Each location on the Forest where a management prescription is applied is called a management area. Management prescriptions were described in Appendix B of the accompanying Environmental Impact Statement. Management prescriptions contain multiple-use practices which produce resource outputs, goods, and services. This section describes the management prescriptions to be used to implement the Forest Plan.

The Forest's management area direction corresponds with the guidance given in the Regional Management Goals found in the Regional Guide. The first digit of both the management area and prescription numbers correspond to one of the nine Regional Management Goals. The Regional Goal missing from the Forest Plan (Goal 4) was not necessary to achieve the objectives desired.

Throughout the remainder of the Forest Plan, we will refer to management areas rather than management prescriptions. This section provides the management direction and the expected resource outputs from each management area. Specifically, it includes:

- o acres assigned to each management area
- o summary of resource output objectives
- o a summary of direction by management area including:
  - a description of the future land condition of management areas
  - resource output objectives for each management area
  - the management practices required to produce the resource outputs
  - management area standards and guidelines

MANAGEMENT AREA ACRE ASSIGNMENT

Table 4-5 lists the acres assigned to each management area. The location of each management area is displayed on the Forest Plan Management Area Map. It can be found in the map folder accompanying the Final EIS and Plan documents.

Management Area Acre Assignment

Table 4-5 Management Area Acre Summary

Forest Plan Management Area	M Acres Assigned[1]
1	7
2	6
3	327
5	10
6.1	101
6.2	20
6.3	1
6.4	23
7	1
8	6
9.1	1

1 This represents the total acres in National Forest ownership minus the acres of water surface. Approximately 503,000 acres. Summaries will vary ± 1M due to rounding.

Several demand or development projections have been made for oil and gas, which increase the amount of high intensity oil and gas development. There are 52,000 acres of existing high intensity oil and gas development. Within 150 years, under the low demand projection, there will be an additional 13,000 acres, with the high projection an additional 137,000 acres. The actual amount of development which occurs is expected to be closer to the high demand estimate than to the low. (Appendix B of the Final EIS contains additional information in Chapter IV.B.2 in the discussion on demand for oil, gas, and minerals. Chapter 4.C of the Final EIS also provides additional information under the discussion for Problem 5: Private Oil and Gas Development.)

This high intensity development is compatible only with Management Areas 1, 2, 3, and 9. Generally, these are the only management areas we have assigned or will assign to units of land which are highly developed for oil and gas production. (Chapter III.D. Identification of Prescriptions, Appendix B of the Final EIS provides additional information).

Limited information is available on where new intensive development may occur, though there are certain locations where there is a higher potential than others. When management areas were assigned to specific locations on the Forest, we attempted to recognize the potential for intensive oil and gas development and its compatibility with each management area's objectives.

Since information is incomplete, high intensity development will no doubt occur in some management areas where it may not be compatible. When development progresses to the point where it significantly affects our ability to achieve that management area's objectives and outputs, that particular site will be assigned to a more compatible management area. To maintain the management area allocation shown in Table 4-5 will require a compensating shift in the management area allocation for some other area of the Forest.

SUMMARY OF RESOURCE OUTPUT OBJECTIVES

Table 4-6 displays the resource output objectives by management area that are planned for Decade 1. Table 4-7 displays outputs projected for Decade 2 if this plan were to continue to be implemented. However, the Forest Plan will be revised at least every 10-15 years so these outputs are subject to change based on the new issues and problems of the next planning cycle.

Table 4-6 Resource Output Objectives by Management Area Planned for Decade 1

Output[1]		Average Annual Amount by Management Area for Decade 1												
		1	2	3	5	6.1	6.2	6.3	6.4	7	8	9	Total
Developed Recreation Opportunities (MRVD)[2]													
Semi-Primitive	D					4			33				37
Motorized	D2					(4)			(33)				(37)
Roaded Natural	D			15		402			13				430
	D2			15		(402)			(13)				(430)
Rural	D									419			419
	D2									(419)			(419)
Dispersed Recreation Opportunities (MRVD)													
Semi-Primitive	D				.10		20						30
Non-Motorized	D2				(10)		(20)						(30)
Semi-Primitive	D					292		1	71		4		368
Motorized	D2					(282)		(1)	(68)		(4)		(355)
Roaded Natural	D	8	10	480								1	499
	D2	(8)	(9)	(388)								1	(406)
Timber Management (MMBF)[3]													
Hardwood Sawtimber	D	0	2.4	30		3.6	2						38
	D2	0	(2.3)	(29)		(3.6)	(2)						(37)
Hardwood Pulpwood	D	0	1.1	47		2.3	5.6						56
	D2	(0)	(1)	(45)		(2.3)	(5.7)						(54)
Wildlife (MWFUD)[4]													
Big-Game	D	2	2.1	110	1.6	19	6.4	.2	5		1.2	.2	147
	D2	(1.7)	(1.8)	(96.9)	(1.6)	(17)	(6.4)	(.2)	(4)		(1.2)	(.2)	(131)
Small Game	D	6	.2	23	.5	15	.8	.4	4		.2	.1	50
	D2	(5)	(.2)	(22)	(.5)	(15)	(.8)	(.4)	(4)		(.2)	(.1)	(48)
Non-Game	D	.4	.4	23	.5	14	1.2	.1	4		.2	.1	44
	D2	(.3)	(.3)	(19.5)	(.5)	(13)	(1)	(.1)	(4)		(.2)	(.1)	(39)
Fishing	D	.3	.3	32	1	66	2	1.3	47	.3	.5	.3	151
	D2	(.3)	(.3)	(31)	(1)	(66)	(2)	(1.3)	(46)	(.3)	(.5)	(.2)	(149)

1 D2 is a variation of the Forest Plan that estimates the results if a high rate of private oil and gas development is experienced during the implementation.
2 MRVD = thousands of recreation visitor days
3 MMBF = millions of board feet
4 MWFUD = thousands of wildlife and fish user days

Table 4-7 Summary of Resource Output Objectives by Management Area for Decade 2

Output[1]		Average Annual Amount by Management Area for Decade 1											
		1	2	3	5	6.1	6.2	6.3	6.4	7	8	9	Total
Developed Recreation Opportunities (MRVD)[2]													
Semi-Primitive	D					5			33				38
Motorized	D2					(5)			(33)				(38)
Roaded Natural	D			26		432			13				471
	D2			(26)		(432)			(13)				(471)
Rural	D										432		432
	D2										(432)		(432)
Dispersed Recreation Opportunities (MRVD)													
Semi-Primitive	D				16		26						42
Non-Motorized	D2				(16)		(20)						(36)
Semi-Primitive	D					292		1	75		4		372
Motorized	D2					(282)		(1)	(73)		(4)		(360)
Roaded Natural	D	7	11	505								1	525
	D2	(6)	(9)	(390)								(1)	(406)
Timber Management (MMBF)[3]													
Hardwood Sawtimber	D	0	0	41		3.6	2						46
	D2	(0)	(0)	(33)		(3.6)	(2)						(39)
Hardwood Pulpwood	D	.7	0	39		2.3	5.6						48
	D2	(1.3)	(0)	(43)		(2.3)	(5.7)						(52)
Wildlife (MWFUD)[4]													
Big-Game	D	2.5	2.1	119	1.6	23	6.8	.2	5		1.2	.2	162
	D2	(2.1)	(1.7)	(102.2)	(1.6)	(22)	(6.8)	(.2)	(5)		(1.2)	(.2)	(143)
Small Game	D	7	.2	27	.8	17	1.5	.4	4		.2	.1	58
	D2	(6)	(.2)	(26)	(.8)	(17)	(1.5)	(.4)	(4)		(.2)	(.1)	(56)
Non-Game	D	.4	.4	25	.8	14	1	.1	4		.2	.1	46
	D2	(.3)	(.3)	(20)	(.8)	(13)	(1)	(.1)	(4)		(.2)	(.1)	(40)
Fishing	D	.3	.3	35	1	75	2	1.3	56	.3	.5	.3	172
	D2	(.3)	(.3)	(29)	(1)	(73)	(2)	(1.2)	(55)	(.3)	(.5)	(.2)	(163)

1 D2 is a variation of the Forest Plan that estimates the results if a high rate of private oil and gas development is experienced during the implementation.
2 MRVD = thousands of recreation visitor days
3 MMBF = millions of board feet
4 MWFUD = thousands of wildlife and fish user days

DIRECTION BY MANAGEMENT AREA

This section provides a summary of each management area. It includes a general description, the objectives, the estimated practices, and the standards and guidelines specific to each management area.

The first section describes the management area and the projected future land conditions. The output objectives table displays the portion of the Forest Objectives that would be produced on that management area. The second table lists the practices that would be necessary to achieve these objectives. The selection of practices was based on the data and technology available at the time of the analysis. As we progress further into implementing the plan, it is likely that more efficient ways of achieving the objectives will be identified through monitoring and research. If so, adjustments to the management practices may be necessary. If the effects of these adjustments are significant, the plan may need to be amended or revised. See Chapter 5 for more information on amendment and revision procedures.

The last section in each management area summary lists the standards and guidelines. The Forest Standards and Guidelines also apply to each management area unless specifically excepted.

Description for Management Area 1 (7,000 acres)

This management area provides a forest of primarily hardwood stands, with interspersed conifers and openings suitable for a variety of game and non-game wildlife species associated with the early successional stages of vegetation.

The primary purpose is to:

- Emphasize habitat management for ruffed grouse and other wildlife species associated with early successional stages of forest habitat.
- Provide a high quality of wood fibre production.
- Provide a roaded natural setting for all types of dispersed recreation opportunities.

The areas managed under this prescription will be predominantly aspen stands. Even-aged timber stands in a balanced variety of age and size classes, from seedling/sapling to small sawtimber, will be evident.

A variety of inclusions, such as conifers, openings, seeded roads, and savannah-type areas will also be present.

Specialized habitats and inclusions will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Timber harvesting, reforestation activities, and wildlife habitat improvement will be intensive. Such activities as commercial or non-commercial timber regeneration, conifer and shrub plantings, release and pruning, and opening maintenance may significantly modify the landscape.

Recreation opportunities will including hunting, viewing wildlife, hiking, cross-country skiing, and viewing scenery.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads, Traffic Service Level (TSL) "C", will be open to all public traffic, except for certain seasonal restrictions for wildlife purposes. Forest Service local roads, TSL "D", will be closed to all public traffic, except for certain seasonal openings to meet resource objectives.

Special uses, utility corridors, road rights-of-way, and intensive oil and gas development may dominate the landscape at specific sites.

Administrative and law enforcement activities will be infrequent.

Table 4-8 Output Objectives for Management Area 1

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Dispersed Recreation Opportunities					
Roaded Natural	M RVD	8	(8)	7	(6)
Timber Management					
Hardwood Sawtimber	MMBF				(0)
Hardwood Pulpwood[1]	MMBF			.7	(1.3)
Wildlife					
Big-Game Hunting	M WFUD	2	(1.7)	2.5	(2.1)
Small-Game Hunting	M WFUD	6	(5)	7	(6)
Non-game	M WFUD	.4	(.3)	.4	(.3)
Fishing	M WFUD	.3	(.3)	.3	(.3)

Table 4-9 Practices for Management Area 1

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Dispersed Recreation Trail Construction		0.8		1.3	
Motorized - Summer	miles	.3	(.3)	.3	(.3)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Improvement	acres	342		342	
Wildlife Structures	# of struct.	1	(1)	1	(1)

1 pulpwood outputs result from nonstructural wildlife habitat improvement

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 1
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

A minimum of 20% of the area should be in the 0-9 age class in each decade, and 20% of the area should be in the 10-19 year age class at any time. Regeneration treatments should be relatively small (up to 10 acres in size).

Regeneration cutting of aspen should be done during the dormant season. Retain at least one downed (drumming) log in each regeneration cutting. Each such log should be more than 10 inches in diameter. The current aspen component should be retained or increased.

2300 RECREATION MANAGEMENT

*Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed, where appropriate, to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences.

*Feature primarily roaded natural ROS class recreation opportunities.

Trails

*Trail management will be compatible with the ROS objective of roaded natural.

Trail types appropriate to this management area are:

Motorized Summer
Pedestrian Summer
Motorized Winter
Pedestrian Winter

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provide a full range of experiences.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Identify opportunities for both onsite and offsite interpretation of cultural resources, considering significance, accessibility, and protection needs.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

Class :	fg-1 :	mg-1 :	bf-1 :	fg-2 :	mg-2 :	bf-2:	3
Class A :	R	PR	PR	PR	M	M	M
Class B :	PR	M	M	PR	M	MM	MM
Class C :	PR	M	M	M	MM	MM	MM

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Even-aged will be the featured silvicultural system used to achieve the wildlife habitat objective.

Uneven-aged management may be an option on inclusions, such as riparian areas, wet soils, or visually sensitive areas. Its use will be based on individual site analysis.

Harvest Cutting Methods

Seasonal restrictions may occur to protect or manage the featured wildlife species, to provide non-motorized recreational opportunities, and to protect soil and water resources.

*Temporary Openings Created by the Application of Even-aged Silviculture

*The maximum size of temporary openings created by even-aged management is 10 acres, except for provisions in NFMA regulations.

- On an individual sale basis after 60 days public notice and review by the Regional Forester.
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Openings will be separated by a manageable stand of at least two acres and a width of 300 feet.

Management Intensity and Utilization

Precommercial or commercial thinning entries should not be necessary. Rotation age will be approximately 50 years.

Harvest cuttings and timing of such cuts will be of the intensity necessary to obtain a balance of age and size classes from seedlings/saplings to small sawtimber over time. See standards for wildlife habitat management in 2600 section.

Firewood

Make maximum utilization of wood residues available for fuelwood purposes. In areas developed for OGM, cooperative measures between the developer, Forest Service, and fuelwood cutter may be necessary to protect the developer's properties.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds, if the option is not taken.

2. Exclude pulpwood from all commercial treatments. Only sawtimber will be sold, cut, and removed from the sale area. To complete the silvicultural prescription, cut or shear large saplings and poles promptly after completing the commercial operations (using KV funds, if available). Consider all aspen as pulpwood until such time as a viable market for aspen sawlogs becomes established.

3. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds if necessary to meet the cutting prescription.

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

If high intensity oil and gas development occurs on this management area, wildlife investments will be made only for those species that are not displaced by the development.

Specialized habitats and inclusions may receive treatments to benefit small-game, non-game, indicator species, and species of special concern.

Habitat management should be directed toward production of ruffed grouse and other species associated with early successional stages of vegetation.

Manage timber stands on short rotation of 40-50 years emphasizing aspen species where practical.

Timber stands to be managed as aspen stands will require a minimum aspen stocking of 20 square feet basal area or 10 healthy mature trees per acre to assure successful regeneration.

Non-commercial treatments may be necessary to maintain the aspen component and improve wildlife habitat.

Maximum acreage to be regenerated every 10 years should be 25% and layout should be on a grid pattern to increase grouse activity centers.

Regeneration cutting for all timber should occur every 10 years and for aspen be scheduled during the dormant season.

Coniferous cover should be provided on a minimum of 2-5 percent of the areas. This cover should be well distributed in small stands and be comprised primarily of seedling/ sapling and poletimber size classes.

Where inadequate cover exists, establish conifer stands ranging in size from 1/4 to two acres in size.

Permanent openings may be provided on up to three percent of the area.

- Openings should be 1/2 to one acre in size usually, and distribution should be 1/10 - 1/5 miles apart.
- Certain trails may be closed to all motorized traffic and seeded to herbaceous seed mixtures.
- Most of the acreage will be managed to favor native grasses, forbs, vines, and shrubs. Selected areas may be planted with exotic shrubs.

- These areas should be irregular in shape to maximize forest edge.

Manage habitat adjacent to selected warm-water non-trout streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Local roads (TSL C) will be closed for the following reasons:

- Roads impacting important brood habitat areas will be closed during the brood rearing season (May 1 to September 1), except for two years following sales. They may be left open to permit firewood collection.

- Roads will be closed during fall turkey and bear hunting seasons if population levels are below desired levels.

- Roads will be closed as necessary during the antlerless deer season to direct hunting pressure into other areas.

Local roads (TSL D) may be opened during the antlerless deer season to provide hunter access if necessary to regulate the deer herd and if road conditions are suitable.

Fish

Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way.

*Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

5100 FIRE MANAGEMENT

*Prescribed fire may be used to establish or maintain vegetation under established resource management prescriptions.

	*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with uses that compromise exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource management objectives.
7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs, hand pumps, and electric pumps. Solid Waste *Use of National Forest System land for landfill disposal sites should be considered only as a part of an areawide system. Effluents Sewage systems may include vault toilets and/or tank and field systems.
7700 TRANSPORTATION SYSTEM	Roads *Arterial roads, at a minimum, will be designed and constructed for transporting forest products and accommodating planned motorized recreation use, will be open, and will be maintained to maintenance level III or higher. *Collector and local roads will be designed and constructed to be suitable for transporting forest products and accommodating planned motorized recreation use.

*Roads may be closed to public use or restricted by vehicle type or season of use.

*Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after termination of the contract, lease, or permit.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed.

Roads leading to and within small scale developed recreation areas should be designed and maintained to a standard applicable to the site.

Forest Service road density will range from one to three miles per square mile in this management area.

Local roads will be either Traffic Service Level (TSL) "C" or "D". This decision will be tied to the specific area and resources being accessed. Traffic Service Level "D" roads will be closed to all public traffic, except as specifically allowed to meet resource objectives within the management area. TSL "C" roads will be open to public traffic, except for certain seasonal restrictions to achieve wildlife objectives.

Description for Management Area 2 (6,000 acres)

In Management Area 2, the Forest will generally have a continuous crown canopy consisting primarily of shade tolerant vegetation with interspersed small openings and associated wildlife. Intensive oil and gas developments may be evident. Its primary purpose is to:

- Provide a continuous, forested scene through practicing uneven-aged management which will promote tolerant species and produce quality sawtimber.
- Feature wildlife species associated with shade tolerant vegetation, primarily songbirds and cavity-nesting birds and mammals.
- Provide the opportunity for a variety of developed and dispersed motorized recreation opportunities in a Roaded Natural setting.

The Forest will consist of primarily uneven-aged Northern hardwood stands (including hemlock) of a variety of ages and size classes from seedlings to sawtimber 18 to 30 inches in diameter. Species composition will be varied, but shade tolerant species will be dominant. In many areas only minor modification of the forest landscape will exist.

Intensive oil and gas development may dominate the landscape at specific sites.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service roads will be open to public traffic, except for certain seasonal restrictions for wildlife purposes.

Developed recreation facilities, such as campgrounds, boat launches, picnic areas, overlooks, and trailhead parking lots, may exist along with appropriate trail signs and bulletin boards. Dispersed recreation facilities, such as ORV trails, signs, and structures (like bridges, etc.), along with trailhead parking lots, trail signs, and bulletin boards may exist. Recreational opportunities may include camping, picnicking, boating, swimming, ORV use, snowmobiling, trailbiking, auto touring, day hiking, hunting, fishing, and bird watching.

Timber harvesting and transportation of forest products will occur frequently as well as timber stand improvement. Wildlife habitat management, road and trail construction, and maintenance will also be evident.

Administrative and law enforcement activities will be frequently seen in this area.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Activities, such as right-of-way maintenance, oil/gas well hydrofracturing, drilling, and maintenance, may occur.

Table 4-10 Output Objectives for Management Area 2

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Dispersed Recreation Opportunities			
Roaded Natural	M RVD	10 (9)	11 (9)
Timber Management			
Hardwood Sawtimber	MMBF	2.4 (2.3)	0 (0)
Hardwood Pulpwood	MMBF	1.1 (1)	0 (0)
Wildlife			
Big-Game Hunting	M WFUD	2.1 (1.8)	2.1 (1.7)
Small-Game Hunting	M WFUD	.2 (.2)	.2 (.2)
Non-Game	M WFUD	.4 (.3)	.4 (.3)
Fishing	M WFUD	.3 (.3)	.3 (.3)

Table 4-11 Practices for Management Area 2

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Timber Practices					
Timber Stand Improvement	acres	60	(60)	0	(0)
Selection	acres	600	(600)	0	(0)
Herbicide	acres	300	(300)	0	(0)
Fencing	acres	54	(54)	0	(0)
Road Construction	miles	.7	(.5)	0	(0)
Road Reconstruction	miles	.3	(.2)	0	(0)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Improvement	acres	17	(17)	17	(17)

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 2

(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

The current hemlock component should be retained or increased. Hemlock should comprise at least 20 percent of the growing stock in this management area, and some pure hemlock stands are desirable.

Both individual trees and small clumps of conifers will be provided throughout the area.

Retain the following snags per acre:

Tree Size	No. Snags
10" to 16" DBH	3
18" to 24" DBH	3
Greater than 24" DBH	3

Old growth habitat should be a component of each stand (tree age greater than or equal to pathological rotation).

2300 RECREATION MANAGEMENT

Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed, where appropriate, to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences.

*Feature primarily roaded natural ROS class recreation opportunities.

Three dispersed recreation management intensities were options within this area which varied by quantity and quality of trail building and recreation management.

- Low Intensity is defined as maintaining the current investments. We would maintain the existing trail system and would not develop any new trails.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity established the upper limit on trail densities for each prescription by the respective Recreation Opportunity Spectrum (ROS) class.

If high intensity oil and gas development occurs in this management area, we will make no new recreation investments. Manage using a low recreation management intensity.

The output objectives and the proposed and probable practice amounts are a result of the moderate intensity being selected.

Recreation Sites

Construction of new sites may occur at development scale 3 or less.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites".

Trails

*Trail management will be compatible with the ROS objective of roaded natural.

Trail types appropriate for this management area are:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

The choice of which types to be constructed will be based on analysis of demand, existing trails (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails should include all three difficulty classes of Easiest, More, and Most Difficult to provide a full range of experiences.

Cultural Resources

*Cultural resources will be evaluated for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Identify opportunities for both on-site and off-site interpretation of cultural resources, considering significance, accessibility, and protection needs.

Provide opportunities for both on-site and off-site interpretation of cultural resources. Interpretation may occur during the evaluation or the excavation of major sites, and the excavation may be featured as well as the findings of the evaluation or excavation.

Visual Quality

Management activities should meet the Visual Quality Objectives VQO displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	PR	PR	PR
Class B	R	R	PR	R	PR	PR	PR
Class C	R	R	PR	R	PR	PR	PR

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Uneven-aged management using either group selection or individual tree selection will be the featured silvicultural system. Project level planning will determine the specific type of selection cut used. In single tree selection, the Q Factor will generally be 1.25 to 1.35 with a maximum tree size of 28 inches DBH. This will result in retaining larger

trees and a greater proportion of large to small trees than more conventional all-aged structures. Uneven-aged management will tend to move stand species composition toward the northern hardwood type.

Even-aged management may be an option on inclusions such as aspen stands for wildlife and within visual corridors for providing variety and viewpoints.

Temporary Openings Created by the Application of Uneven-aged Silviculture

Openings up to one-half acre in size are acceptable if the establishment of some intolerant species regeneration is desired.

Management Intensity and Utilization

*Minimum stand size for timber production normally will be 10 acres.

Selection cut every 15-20 years. Begin cutting to develop stand structure when stand will produce operable volume. Age of first entry is normally 60 years, with emphasis on producing quality sawtimber. This first entry rule does not apply once the stands are all converted.

Firewood

Make wood residues available for fuelwood purposes. In areas developed by OGM, cooperative measures between the developer, Forest Service, and fuelwood cutter may be necessary to protect the developer's properties.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds, if the option is not taken.
2. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.

2600 WILDLIFE MANAGEMENT

Wildlife Management

Three wildlife management intensities were options within this prescription which varied by quantity and quality of habitat development.

- Low Intensity maintains the current investments with no new habitat development.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity conforms with achieving the upper limit of the featured species population range. These upper limits are consistent with those specified in recent research literature, modified slightly based on our professional knowledge of local conditions.

The output objectives and the proposed and probable practice amounts are a result of the moderate intensity being selected.

Specialized habitats and inclusions within the management area, will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

If high intensity oil and gas development occurs on this management area, wildlife investments will be made only for species that would not be affected adversely by the development.

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet the needs of management indicator species. Distribution of openings will recognize the home range needs of the selected species. Opening and grassland objectives will recognize the contribution of adjacent private lands.

Habitat management should be directed toward production of cavity-nesting birds and mammals as well as songbirds.

Wildlife habitat management includes permanent opening development and maintenance.

- Provides a minimum of one percent and a maximum of three percent in permanent openings.
- New openings should range in size from one to five acres, and selected ones seeded to herbaceous mixtures. Where feasible, encourage a variety of native shrubs, grasses, and forbs.
- Spatial distribution should be 1/5 to 1/2 mile apart.
- Maintain all shrub type openings less than 20 acres in size unless the percent available exceeds the maximum.

Manage recognized deer and turkey wintering areas to provide a sustained supply of winter thermal cover and food.

- Thermal cover will be dispersed. When vegetation composition goals are achieved, there will generally be no more than 10% of a management area in conifers. Rhododendron and mountain laurel will be provided in selected areas to provide additional thermal cover and habitat diversity.
- Seedling/sapling, pole timber, and sawtimber size classes of conifers will be provided.
- Favor hemlock and white pine where they occur.
- Manage timber stands within and adjacent to wintering areas to increase browse and mast production.

Manage habitat adjacent to selected warm-water non-trout streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Regenerate aspen inclusions to increase their age class diversity.

Provide cover/forage edge adjacent to rights-of-way.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Provide three to five trees with nesting cavities per acre, with a minimum DBH of 14 inches.

Local roads may be closed for the bear and fall turkey hunting seasons when necessary to meet the management objectives for these species.

*Fish

*Vegetation canopy in and along streams should be manipulated to provide water temperatures within the prescribed ranges to meet the fisheries objective.

*Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way.

Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands such as utility rights-of-way serving individual residences will be determined individually, consistent with the standards and guidelines.

5100 FIRE MANAGEMENT

*Prescribed fire may be used to establish or maintain vegetation under established resource management prescriptions.

*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable State laws.

5400 LAND OWNERSHIP

Surface Ownership

*Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.

7300 BUILDINGS AND STRUCTURES

*Buildings and structures may be provided to support resource management objectives.

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES

Water Supply

*Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality.

Water systems may include springs, hand pumps, and electric pumps.

Solid Waste

*Use of National Forest System land for landfill disposal sites should be considered only as a part of an areawide system.

Effluents

Sewage systems may include vault toilets, and/or tank and field systems.

7700 TRANSPORTATION SYSTEM

Roads

*Arterial roads, at a minimum, will be designed and constructed for transporting forest products and accommodating planned motorized recreation use, will be open, and will be maintained to maintenance level III or higher.

*Collector and local roads will be designed and constructed to be suitable for transporting forest products and accommodating planned motorized recreation use.

*Roads may be closed to public use or restricted by vehicle type or season of use.

*Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after termination of the contract, lease, or permit.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed.

Roads leading to and within small scale developed recreation areas should be designed and maintained to a standard applicable to the site.

Forest Service road density will range from two to four miles per square mile in this management area.

Local roads will be Traffic Service Level "C". These local roads will normally be open to public traffic. Some seasonal closures may be imposed to meet specific wildlife management objectives.

Description for Management Area 3 (327,000 acres)

The emphasis in this management area is to provide a forest which is a mosaic of predominantly hardwood stands and associated understories that provide habitat for game and non-game wildlife species. Each stand will consist of trees of approximately the same age and height. Intensive oil and gas developments may be evident. The primary purpose is to:

- Provide a sustained yield of high-quality Allegheny hardwood and oak sawtimber through even-aged management.
- Provide a variety of age or size class habitat diversity from seedling to mature sawtimber in a variety of timber types.
- Emphasize deer and turkey in all timber types and squirrel in the oak type.
- Provide a roaded natural setting for all types of developed and dispersed recreation opportunities, with an emphasis on motorized recreation activities.

The areas managed under this prescription will result in a forest of Allegheny or oak hardwood stands with inclusions of conifer, shrub, and herbaceous openings.

Even-aged timber stands distributed across a variety of age classes will be evident throughout the area. Tree sizes will range from seedlings to mature sawtimber.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads, Traffic Service Level (TSL) "C", will be open to all public traffic, except for certain seasonal restrictions for wildlife purposes. Forest Service local roads, TSL "D", will be closed to all public traffic, except for those situations where a seasonal opening/closure policy supports other resource objectives.

Developed facilities may include campgrounds and picnic areas with a variety of toilet facilities and drinking water systems. Dispersed recreation facilities may include trailhead facilities and developed trail systems.

Utility corridors, road rights-of-way, and development of oil and gas fields may be evident. In some areas intensive oil and gas development will dominate the landscape.

The following types of management activities will be ongoing within the area: timber harvesting and hauling of forest products; reforestation, timber stand improvements; wildlife habitat management work; and road, trail, and recreation facility construction and maintenance.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Recreational activities may include auto camping, ORV trailriding, auto touring, boating, day hiking, swimming, fishing, and hunting.

Administrative and law enforcement activities will be frequently seen in the area.

Activities, such as right-of-way maintenance, oil/gas well drilling and hydrofracturing, and oil/gas well maintenance, will occur in a portion of the area.

Table 4-12 Output Objectives for Management Area 3

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Opportunities			
Roaded Natural	M RVD	15 (15)	26 (26)
Dispersed Recreation Opportunities			
Roaded Natural	M RVD	480 (388)	505 (390)
Timber Management			
Hardwood Sawtimber	MMBF	30 (29)	41 (33)
Hardwood Pulpwood	MMBF	47 (45)	39 (43)
Wildlife			
Big-Game Hunting	M WFUD	110 (97)	119 (102)
Small-Game Hunting	M WFUD	23 (22)	27 (26)
Non-Game	M WFUD	23 (19)	25 (20)
Fishing	M WFUD	32 (31)	35 (29)

Table 4-13 Practices for Management Area 3

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 (D2)	Projected Decade 1 (D2)
Developed Recreation Area Construction			
Campgrounds	# of areas[1]	0 (0)	1 (1)
Dispersed Recreation-Trail Construction	miles		
Pedestrian	miles	1.2 (.6)	1.4 (.8)
Motorized-Winter	miles	1.1 (1.1)	1.1 (1.1)
Motorized-Summer	miles	12 (12)	12 (12)
Timber Practices			
Final Harvest Clearcuts	acres	292 (292)	302 (232)
Final Harvest - Shelterwood	acres	2628 (2628)	2718 (2088)
Thinning[2]	acres	8360 (8460)	6760 (9360)
Timber Stand Improvement[3]	acres	706 (606)	566 (766)
Herbicide	acres	1485 (1485)	1585 (1285)
Fertilization	acres	2256 (2256)	1156 (1056)
Fencing	acres	300 (300)	354 (354)
Planting	acres	190 (180)	180 (80)
Site Prep for Natural Regeneration	acres	1460 (1460)	1460 (1060)
Road Construction	miles	20.8 (22)	11.2 (16.5)
Road Reconstruction	miles	8.5 (9.0)	4.6 (6.7)
Wildlife and Fish Habitat Improvement			
Wildlife Habitat Improvement	acres	1176 (1176)	1541 (1389)
Wildlife Structures	# of struct.	0 (0)	6 (3)

1 Unit of measure for this practice is the number of recreation areas to be completed within the entire decade not an average annual amount.

2 The wide variation in thinning acres displayed here results from a modeling limitation caused by lumping analysis areas into 20-year age classes. The 60-year-old and 80-year-old age classes support thinnings in Decade 1 and 2, but the PNV is higher for the thinnings in Decade 1. The next cycle of planning 10 years hence will more adequately address thinning amounts in the second decade.

3 All of the acres shown for this practice are noncommercial cutting of pulpwood to complete the silvicultural prescription in commercial thinnings.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 3
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

Old growth habitat timber at pathological rotation or older should be provided on a minimum of 5 percent of the area.

Retain 5 snags per acre greater than 10 inches DBH.

2300 RECREATION MANAGEMENT

*Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed, where appropriate, to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences.

*Feature primarily roaded natural ROS class recreation opportunities.

Three dispersed recreation management intensities were options within this prescription which varied by quantity and quality of trail building and recreation management.

- Low Intensity is defined as maintaining the current investments. We would maintain the existing trail system and would not develop any new trails.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity established the upper limit on trail densities for each prescription by the respective Recreation Opportunity Spectrum (ROS) class.

The output objectives and the proposed and probable practice amounts are a result of the moderate intensity being selected.

If high intensity oil and gas development occurs, make no new recreation investments. Manage using a low recreation management intensity.

Recreation Sites

Construction of new sites may occur at development scale 3 or less.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Trails

*Trail management will be compatible with the ROS objective of roaded natural.

Trail types appropriate to this management area are:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provide a full range of experiences.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Identify opportunities for both onsite and offsite interpretation of cultural resources, considering significance, accessibility, and protection needs.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

Class :	FG-1 :	MG-1 :	BG-1 :	FG-2 :	MG-2 :	BG-2:	3
Class A :	R	PR	PR	PR	M	M	M
Class B :	PR	M	M	PR	M	MM	MM
Class C :	PR	M	M	M	MM	MM	MM

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Even-aged will be the featured silvicultural system.

Uneven-aged management may be an option on inclusions, such as riparian areas, wet soils, or visually sensitive areas. Its use will be based on individual site analysis.

Harvest Cutting Methods

Seasonal restrictions may occur to protect or manage the featured wildlife species, to provide non-motorized recreational opportunities, and to protect soil and water resources.

*Temporary Openings Created by the Application of Even-aged Silviculture

*The maximum size of temporary openings created by even-aged management is 40 acres, except for provisions in NFMA regulations.

- On an individual sale basis after 60 days public notice and review by the Regional Forester.
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Management Intensity and Utilization

A variety of management intensities are options for Management Area 3. All analysis areas (see definition in Appendix A) except those which have low stocking, have three management intensities as options. These are based on the amount of stand stocking regulation activity: (1) Regeneration cut only; (2) One thinning - regeneration cut; and (3) Two thinnings - regeneration cut. The more productive analysis areas also have an option for a third thinning entry. High site oak and Allegheny hardwood analysis areas have the option for an intensity of management which includes precommercial thinning and either one, two, or three thinnings depending on when the final harvest occurs. High site oak AA/s have an additional intensity which calls for type conversion to Allegheny hardwoods.

Table 4-13, " Proposed and Probable Practices," summarizes the results of management intensities chosen to be carried out.

Earliest age for the first commercial thinning:

Analysis Area Characteristics	Age at First Entry
Oak - High & low site	60 years for all intensities except precommercial thinning
- High site	50 years for precommercial thinning intensity
Low & High CAP's	
45-74% stocked	80 years
≥ 75% stocked	60 years
High CAP's	50 years for precommercial thinning intensity

Commercial thinnings are not appropriate within 10 years of a scheduled regeneration cut.

Precommercial thinning may be appropriate in those Allegheny hardwood and high site oak stands that have a stocking level of 80 percent or more and contain a substantial share of their stocking (basal area) in saplings. In order to maximize economic benefits from precommercial thinning, complete the work when the stand is 20 to 30 years old.

- Remove poorly formed trees and low-valued individuals that threaten the potential crop trees.

- Silvicultural guidelines for precommercial thinning are provided in "Silvicultural Guidelines for Allegheny Hardwoods and Oak" publication.

Non-commercial thinning may be used to remove optional pulpwood when it has not been cut by the timber purchaser.

The minimum rotation age corresponds with the point at which the stand has exceeded 95 percent of Culmination of Mean Annual Increment (CMAI) of growth. The following table displays the earliest age for regeneration cutting.

Table 4-14 Minimum Rotation Ages

		Management Intensity							
		Regen Cut Only		Commercial Thinning		Conversion		Commercial Thin & PCT	
Timber Type	Stocking/ Site Index	Exist[1]	Regen	Exist[1]	Regen	Exist[1]	Regen	Exist[1]	Regen
Oak	SI≥65	60	50	80	80	80	80	80	70
	SI<65	60	60	80	80				
High CAPS	45-74%	80	60	90	90				
	>75%	60	50	80	70		80	70	
Low CAPS	45-74%	80	80	90	90				
	>75%	70	70	80	80				
All CAPS	<45%					60	80		

1 Current stand on the site.

Firewood

Make maximum utilization of wood residues available for fuelwood purposes. In areas developed for OGM, cooperative measures between the developer, Forest Service, and fuelwood cutter may be necessary to protect the developer's properties.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds if the option is not taken.

2. Exclude pulpwood from all commercial treatments. Only sawtimber will be sold, cut, and removed from the sale area. To complete the silvicultural prescription, cut or shear large saplings and poles promptly after completing the commercial operations, using KV funds if available. Consider all aspen as pulpwood until such time as a viable market for aspen sawlogs becomes established.

3. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

Three wildlife management intensities were options within this prescription which varied by quantity and quality of habitat development.

- Low Intensity maintains the current investments with no new habitat development.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity conforms with achieving the upper limit of the featured species population range. These upper limits are consistent with those specified in recent research literature, modified slightly based on our professional knowledge of local conditions.

The output objectives and the proposed and probable practice amounts are the result of the moderate intensity being selected.

If high intensity oil and gas development occurs on this management area, wildlife investments will be made only for species that are not adversely affected by the development.

Habitat management should be directed toward production of turkey and deer in all timber types and squirrel in oak.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Wildlife habitat management should emphasize a variety of timber age classes.

- In general, when emphasizing wild turkey the acreage in the 0-20 year age class should not exceed 20 to 25 percent of the management area.
- Also, mast producing timber (35 or more years of age, depending on species,) should exist on 50 percent or more of the management area.

Wildlife habitat management will provide a minimum of three percent and a maximum of 10 percent in permanent openings and other types of turkey brood habitat. Most of this acreage will be comprised of shrub-type openings, savannah, and rights-of-way.

- Retain openings less than 20 acres in size unless the percent available exceeds the maximum. Some existing fields over two acres in size may be planted with fruit-bearing trees and shrubs.
- Brood habitat for turkeys less than three weeks of age can be managed in stands up to 80 acres in size. This unique habitat contains certain ground vegetation, vertical stand structure and timber stocking densities.
- New permanent openings created will range in size from one to five acres.
- Spacial distribution should be 1/4 to 1/2 mile apart.
- Some openings will be seeded to non-native grasses and legumes to improve turkey habitat; however, most openings will be managed in native grasses, forbs, and shrubs.

- Selected areas may be developed adjacent to sawtimber size coniferous cover to provide turkey wintering areas.

    - These areas will be located at elevations less than 1,800 feet and preferably on south slopes or valley bottoms.
    - Areas developed will range in size from 5-10 acres and should be located at one to two mile intervals adjacent to stream bottoms.
    - Food and cover-producing trees and shrubs that have persistent fruit will be planted where necessary to complement existing food-producing species.
    - If cover is scarce, plant two acres in conifers.
    - Provide at least a 200-yard wide buffer zone around them where human activity and land management practices are regulated.
    - Protective fencing may be required to protect seedlings from deer.

Manage recognized deer and turkey wintering areas to provide a sustained supply of winter thermal cover and food.

- Thermal cover will be dispersed. When vegetation composition goals are achieved, there will generally be no more than 10 percent of a management area in conifers. Rhododendron and mountain laurel will be provided in selected areas to provide additional thermal cover and habitat diversity.
- Seedling/sapling, pole timber, and sawtimber size classes of conifers will be provided.
- Favor hemlock and white pine where they occur.
- Thin timber stands within and adjacent to wintering areas to increase browse and mast production.

Manage habitat adjacent to selected warm-water (non-trout) streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Regenerate aspen stands to increase their age class diversity.

Provide cover/forage edge adjacent to rights-of-way.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Provide wetland habitats to meet the needs of selected species.

Provide four to six live den trees per acre with a minimum DBH of 14 inches in the oak type.

Roads and trails should be located to avoid turkey brood habitat and wintering areas for both turkey and deer.

Road construction should be scheduled to avoid a conflict during the turkey nesting season, April 15 to June 15, to the extent practicable.

Local roads will be closed for the following reasons:

- Those impacting turkey brood habitat areas will be closed during the period of May 1 to September 1, except for two years following sales they may be left open for firewood collection.
- During the fall turkey and bear hunting seasons if necessary to meet the management objectives for these species.
- During the deer season to direct hunting pressure into other areas where overbrowsing by deer is occurring.
- To meet the Pennsylvania Fish Commission guideline for Wilderness Trout Streams management; i.e., stream must not be accessible to motorized vehicles at more than one point every two miles. Refer to the 2600 section of the Forest-wide Standards and Guidelines for a listing of these streams.

Resource management activities that would disturb turkeys during the nesting season (April 15 - June 15) should be scheduled to avoid a conflict to the extent practicable.

Fish

Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way.

	*Utility Distribution Systems *Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.
4000 RESEARCH	The Muzette Tract is a candidate Research Natural Area (RNA) located in Management Area 3. This area is only under study and must receive a thorough evaluation before being officially designated "RNA" by the Chief of the Forest Service. No actions will be taken that may effect its suitability or capability to be so designated. For additional information, consult the Final EIS, Chapter 3, Section B - "Special Areas". The primary purpose of an RNA is to preserve unique ecosystems for scientific purposes. The Northeast Forest Experiment Station will be responsible for the management of all designated RNA's.
5100 FIRE MANAGEMENT	*Prescribed fire may be used to establish or maintain vegetation under established resource management prescriptions. *Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with uses that compromise exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource management objectives.

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs, hand pumps, and electric pumps. Solid Waste *Use of National Forest System land for landfill disposal sites should be considered only as a part of an areawide system. Effluents Sewage systems may include vault toilets and/or tank and field systems.
7700 TRANSPORTATION SYSTEM	Roads *Arterial roads, at a minimum, will be designed and constructed for transporting forest products and accommodating planned motorized recreation use, will be open, and will be maintained to maintenance level III or higher. *Collector and local roads will be designed and constructed to be suitable for transporting forest products and accommodating planned motorized recreation use. *Roads may be closed to public use or restricted by vehicle type or season of use. *Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic. *All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after termination of the contract, lease, or permit. *Identify all existing roads and determine those needed for administrative and public use.

Roads leading to and within small scale developed recreation areas should be designed and maintained to a standard applicable to the site.

Forest Service road density will range from two to four miles per square mile in this management area.

Local roads will be either Traffic Service Level (TSL) "C" or "D". This decision will be tied to the specific area and resources being accessed. Traffic Service Level "D" roads will be closed to all public traffic, except as specifically allowed to meet resource objectives within the management area. TSL "C" roads will be open to public traffic, except for certain seasonal restrictions to achieve wildlife objectives.

Description for Management Area 5 (10,000 acres)

The emphasis in this management area is to provide a natural ecosystem in Congressionally designated Wilderness.

The primary purpose is to:

- Preserve natural ecosystems.
- Protect the Wilderness character for future generations.
- Provide a Wilderness experience in a natural-appearing, unmodified environment within a semi-primitive non-motorized recreation setting.

The existing stands of hardwoods, if managed under this goal, will eventually provide extensive old growth stands of oak, sugar maple, beech, and hemlock. Valley bottoms now interspersed with openings may eventually be transformed through succession into stands of tolerant species. Visitor use areas will maintain a near natural appearance.

Existing openings left from early oil and gas and logging production (i.e., old roads, railroad grades, pipelines, oil well sites, power houses, roadlines, and cleared rights-of-way) have and will continue to slowly revert to a natural Forest condition.

Facilities such as pedestrian trails, campsites, signing will provide a way to disperse recreation use throughout the areas. Recreationists will be involved in non-motorized activities such as dispersed camping, hiking, cross-country skiing, fishing, hunting, nature appreciation, viewing wildlife, and viewing scenery.

Administrative and law enforcement activities may occur where needed to maintain the natural character and integrity of the ecosystem.

No utility corridors or road rights-of-way will be permitted. Private rights will be honored.

Table 4-15 Output Objectives for Management Area 5

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Dispersed Recreation Opportunities					
Semi-Primitive Non-Motorized	M RVD	10	(10)	16	(16)
Wildlife					
Big-Game Hunting	M WFUD	1.6	(1.6)	1.6	(1.6)
Small-Game Hunting	M WFUD	.5	(.5)	.8	(.8)
Non-Game	M WFUD	.5	(.5)	.8	(.8)
Fishing	M WFUD	1	(1)	1	(1)

Table 4-16 Practices for Management Area 5

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Dispersed Recreation-Trail Construction	miles	0.3	(.3)	0	(0)
Wilderness Management[1]	acres	9719	(9719)	9719	(9719)

1 Wilderness management covers the scheduling and implementation of many minor activities further defined in the Standards and Guidelines. It includes such activities as boundary location, signing, and visitor information services.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 5
(An asterisk designates standards taken from the Eastern Regional Guide.)

1500 EXTERNAL RELATIONS

Search & Rescue

Motorized and mechanical equipment may be used only in life threatening situations for search and rescue with Forest Supervisor approval. Operations will be coordinated with local county sheriff. The Forest Service will maintain control of search and rescue operations in Wilderness areas.

- Horses or helicopters will be favored over wheeled vehicles.
- If vehicles are required, either snowmobile or low pressure balloon tires will be favored.

1600 INFORMATION SERVICES

Information will generally be provided through use of the Recreation Opportunity Guide, maps, brochures, etc.

Interpretative information, if provided, will be outside of Wilderness boundaries.

Publications should emphasize:

- Outdoor ethics and no trace camping
- Weekday and winter use to those seeking more solitude.
- Orienteering as a way to minimize use impacts, reduce people encounters, and increase solitude experience.

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Manage vegetation only to protect Wilderness values or to protect adjacent property from fire or pests.

Natural succession will be allowed to proceed as the dominant process.

Use native plants for temporary soil stabilization. Annuals will be used so as to favor natural succession.

Planning

An operating plan will be prepared for each Wilderness to direct implementation of Forest Plans and to guide routine activities.

2100 ENVIRONMENTAL MANAGEMENT

Air Quality

The Forest Supervisor will coordinate with the Commonwealth of Pennsylvania on potential air pollution impacts to wilderness resources.

Pesticide Use

*Use pesticides in designated Wilderness only when necessary to prevent the loss of significant aspects of the designated Wilderness or to prevent significant losses to resource values on private or public lands bordering the Wilderness. Obtain Regional Forester approval for all pesticide applications in Wilderness.

Normally endemic forest pests will not be controlled.

2300 RECREATION MANAGEMENT

Opportunities

*Feature semi-primitive non-motorized ROS class recreation opportunities. Allow recreation use consistent with protecting Wilderness values.

Current conforming use patterns will be allowed to continue until use reaches carrying capacity, overuse occurs, or visitor conflicts arise.

A range of management options will be considered when unacceptable environmental damage or significant user dissatisfaction results. The emphasis will be on (1) educational approaches - signing, brochures; (2) natural resource modification - closing trails, restoration, tent pads; and (3) use of regulatory approaches - law enforcement, permit system, only if others fail.

Use of any motorized vehicles and equipment is prohibited. In addition, bicycling, hang gliding, and use of temporary roads or aircraft landing sites is prohibited.

Camping and day use will be permitted on the Allegheny River Islands, and non-motorized watercraft may be landed on the shoreline.

Trails

*Trail management will be compatible with the ROS objective of the area.

Trail types appropriate to this management area are:

Pedestrian Summer
Pedestrian Winter

Trails may include two difficulty classes of More and Most Difficult experiences within the semi-primitive non-motorized ROS class.

Off-Road Vehicles (ORV)

ORV use will not be permitted.

Cultural Resources

*Cultural resources will be evaluated for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Cultural resource values within a Wilderness may be stabilized and preserved when these values are compatible with and enhance Wilderness values.

*On-site cultural resource interpretation will not occur.

No scientific excavations will occur unless justified by providing scientific information not likely to be found elsewhere. Any digs will be promptly restored to natural condition.

*Visual Quality

*Management activities should meet the visual quality objective of preservation or retention for all sensitivity levels, distance zones, and variety classes.

2400 TIMBER MANAGEMENT

*Timber is not harvested under this management goal.

Salvage of timber damaged as a result of fire, storm, or pests will not occur, except to protect Wilderness values or to protect adjacent property from fire or pests.

Firewood

Firewood may be gathered in Wilderness, but only for use within the Wilderness boundary. If significant resource damage is expected, gathering may be restricted by Forest Supervisor order.

2500 SOIL AND RESOURCE MANAGEMENT

*Control measures to mitigate erosion will be commensurate with the soil characteristics, expected use, and management objectives of the area.

*Limit watershed improvement projects to correcting problems caused by people and natural disasters that threaten downstream health and safety. Abandoned oil and gas wells on federal mineral ownership will be plugged if the wells pose a safety hazard or are polluting surface or ground water.

Current water quality will be maintained in the Hickory Creek Watershed to protect instream values. Variation in water quality may occur in response to natural elements.

Riparian Area Management

Public use of specific areas may be limited to protect water quality.

Trails will be located to protect soil and water quality values.

Riparian areas will be managed to protect the natural condition of riparian ecosystems. Creation or enhancement of riparian-dependent resources, such as wildlife or fish habitat, is generally not appropriate.

2600 WILDLIFE MANAGEMENT

Fish and wildlife habitat management may occur to the extent it is consistent with Wilderness management objectives and to meet the needs of threatened and endangered species.

- Wildlife habitat will not be manipulated except for T&E species.
- Hunting, fishing, and trapping may occur subject to applicable state and federal laws.
- Stocking of fish will be permitted to re-establish or supplement native populations when determined necessary by the Forest Service and the Pennsylvania Fish Commission. Stocking will be in accordance with the provisions of the Wilderness Act.
- Winter recreational use will be discouraged on the islands if it interferes with Bald Eagle populations. Impacts of recreational use on the islands with respect to spring and fall osprey migrations will be monitored. Restrictions will be implemented as necessary.
- Existing wildlife improvements will not be maintained and will be allowed to revert to natural conditions.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Corridors for reservoirs, water conservation works, power projects, transmission lines, and other facilities are not permitted, except as authorized by the act establishing the Wilderness or in accordance with private rights.

*Other Special Uses

*Special uses in Wilderness areas will not be permitted, except as authorized by the act establishing the Wilderness and will be considered on an individual basis.

Outfitter or other commercial permits may be issued if compatible with Wilderness objectives and if they provide for protection of Wilderness attributes.

2800 MINERALS AND GEOLOGY

Federal Minerals

The Pennsylvania Wilderness Act of 1984 withdrew all leasing authority for Federal minerals located within the Hickory Creek or Allegheny Islands Wilderness Areas. Rock sources within the wilderness areas will not be used or developed.

Private Minerals

The Pennsylvania Wilderness Act of 1984 directed the Secretary of Agriculture to purchase all of the outstanding mineral rights, on a willing seller basis, under the Hickory Creek and Allegheny Islands Wilderness Areas.

If private development occurs, the goal for Forest Service administration is to reduce the impacts of development on visual quality, recreation opportunities, watershed values, and wildlife habitat, while honoring private rights.

At least 60 days in advance of proposed development, the developer will provide the Forest Service with a Plan of Operations. The Plan of Operations must be approved by the Forest Service before any surface disturbing activities begin. In addition to those items specified in the forest-wide standards and guidelines, the Plan will address the following:

Schedule of Activities and Staging of Operations

The staging of well construction will be provided in the Plan of Operations. At any one time, no more than five well sites and accompanying access roads will be cleared in advance of actual drilling operations. Each five-well package will be handled as a single timber sale payment unit.

In the vicinity of developed recreation sites or areas receiving heavy recreation use, the Forest Service may impose restriction on the hours, days, or season of operation in order to reduce impacts on recreationists.

Water for hydrofracturing will be stored in tanks.

Production and Collection Facilities

Visual impacts of facilities will be reduced to the extent possible by siting, vegetative screening, or other methods. All above-ground facilities will be painted with earth-tone colors. Construction materials will meet visual quality requirements.

Roads will be gated and will be used only for oil and gas production activities.

Tank batteries will be located outside wilderness areas whenever where possible. Tanks and separators will be located on one site in the development. Tank hatches will be locked.

Where possible, all utility and collection lines will be buried at a minimum depth of three feet and marked with Terra tape or its equivalent. Surface lines may be permitted if boulders, topography, or other conditions make burial impractical or infeasible. Lines will be located in road rights-of-way. Lines may be located outside of rights-of-way if no new corridor clearing is required for their installation.

Pump jacks will be powered by electric motors and signed to warn the public of automatic operation.

Natural gas that is not utilized on the development or marketed will be flared.

Methods for Waste Disposal

All produced water will be contained in tanks and disposed of outside Wilderness areas by state-approved methods.

Stumps will be buried in an approved location or removed from the Wilderness areas. Slash will be lopped to within three feet of the ground and scattered.

Excess or unused materials, litter, and trash will be promptly removed from the development and disposed of properly.

Surface Restoration Plan

The goal of surface restoration is to restore the natural landform and facilitate the establishment of forest vegetation.

A bond to guarantee stabilization and final restoration of disturbed areas will be required on all developments.

Restoration plans will include removal of all equipment and facilities, recontouring of roads and well sites, and revegetating all disturbed areas. In order to restore forest vegetation, methods such as scarification, fertilizing, mulching, liming, direct seeding, or planting shrubs and trees may be necessary. Native plant species will be used when seed or planting stock is available.

Any equipment or facility not used for a period of one year is considered abandoned and must be removed by the owner within 90 days of notification.

4000 RESEARCH

The Forest will actively cooperate with research intended to develop basic knowledge on ecological processes, human behavior, or Wilderness management problems.

All proposed projects will be reviewed to determine if essential in a Wilderness environment. Approved projects will be conducted in a manner compatible with the preservation of a Wilderness environment.

There are three candidate Research Natural Areas (RNAs) located within the Allegheny Islands and Hickory Creek Wilderness Areas. They are:

- Crulls Island (96 acres)
- Thompson Island (67 acres)
- Sheffield Compartment 126 (276 acres)

These areas are only under study and must receive a thorough evaluation before being officially designated "RNA" by the Chief of the Forest Service. No actions will be taken that may affect their suitability or capability to be so designated. For additional information, consult the Final EIS, Chapter 3, Section B - "Special Areas".

The primary purpose of an RNA is to preserve unique ecosystems for scientific purposes. The Northeastern Forest Experiment Station will be responsible for the management of all designated RNAs.

5100 FIRE MANAGEMENT

Wildfire detection and suppression will be commensurate with the resource value to be protected. Detection and suppression will be planned, based on an analysis of probable fire locations, expected fire intensities, potential net resource value change, and potential threat to health, safety, and adjacent properties.

All fire suppression activities will be in accordance with established Wilderness policy.

- Fire suppression will be by non-motorized means.
- Regional Forester approval is required for use of tractors, plows, tracked, or mechanized equipment.
- Disturbance to soil and vegetation created by fire suppression will be rehabilitated as soon as possible using nonmechanical means and native plant species.
- If fuel buildup becomes a problem, those areas may be closed to open fires.

5400 LAND OWNERSHIP

Subsurface

Private mineral rights will be acquired within Wilderness areas to protect Wilderness values as specified in the designating legislation.

7100 ENGINEERING OPERATIONS	Surveying Wilderness boundaries will be marked to a standard that will allow for identification. - Wilderness boundaries will be surveyed only where and when there is a threat of encroachment by other activities. - Wilderness boundaries will be posted at 100 foot intervals adjacent to private lands and at 300 foot intervals along roads. Signs Trail signs may be provided within Wilderness boundaries. - All signs will conform to Wilderness standards of rustic routed wood. - Signing within areas will be kept to a minimum and primarily used for direction and safety. - Each of the Wilderness islands will be identified as belonging to the system. - Painted trail blazes are generally inappropriate within Wilderness areas. Trails will be marked with axe blazes or rock cairns. Solid Waste Sewage systems will not be developed.
7300 BUILDINGS AND STRUCTURES	*No buildings or structures will be constructed, except as authorized by the act establishing the Wilderness.
7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES	*Water Supply *Drinking water sources will not be developed. *Emphasize and promote use of the carry-in/carry-out method of disposal. *Solid Waste *Landfill disposal sites will not be provided.

Biodegradable waste from dispersed recreation use may be burned or buried by users. Plastic, metal, and other waste must be carried out. Additional waste disposal regulations may be ordered by the Forest Supervisor to protect the Wilderness experience and environment.

7500 WATER STORAGE AND TRANSMISSION

Dams

No dam construction will occur.

7700 TRANSPORTATION System

Roads

All roads will be eliminated from designated Wilderness areas, excepting those necessary for oil and gas recovery on outstanding rights or on private property.

Description for Management Area 6.1 (101,000 acres)

The emphasis in this management area is to provide a land condition with vegetation predominantly made up of mature or overmature hardwood forests.

The primary purpose is to:

- Maintain or enhance scenic quality.
- Emphasize a variety of dispersed recreation activities in a semi-primitive motorized setting.
- Emphasize wildlife species which require mature or overmature hardwood forests, such as turkey, bear, cavity-nesting birds, and mammals.

Since timber management activities will be for wildlife habitat improvement, much of the Forest will generally progress to a mature hardwood type. Scattered herbaceous, shrub, and conifer inclusions will be evident due to the wildlife habitat improvement practices. In portions of the area, small stands of hardwoods in a variety of age classes will be evident from implementing timber practices to benefit wildlife.

State, township and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads, Traffic Service Level (TSL) "D", will be closed to all public traffic except for certain seasonal exceptions.

Recreational facilities will generally be limited to those necessary to provide access into the area or to protect resources such as trails, trailhead facilities, and primitive campsites, vault toilets, and spring or hand pump water systems.

Utility corridors and low intensity development of oil and gas fields may be evident within the area.

Seasonal wildlife habitat improvement and maintenance will include such activities as shrub and conifer planting, release treatments, and food plot maintenance. Timber harvesting to enhance wildlife habitat will occur periodically in some locations.

Road and trail construction and maintenance will occasionally be evident. Administrative and law enforcement activities will occur.

Recreational opportunities will include dispersed activities such as cross-country skiing, backpacking, hiking, fishing, hunting, and ORV trail riding.

A variety of game and non-game wildlife species may be seen that are characteristic of mature forested habitat including squirrel in the oak type and non-game birds in all types.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Activities, such as right-of-way maintenance, oil/gas well hydrofracturing, drilling and maintenance, will occur but will be a minor part of the total activity in the area.

TABLE 4-17 Output Objectives for Management Area 6.1

Output by Management Problem		Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Opportunities				
Semi-Primitive Motorized	SPM	M RVD	4 (4)	5 (5)
Roaded Natural	RN	M RVD	402 (402)	432 (432)
Dispersed Recreation Opportunities				
Semi-Primitive Motorized	SPM	M RVD	292 (282)	292 (282)
Timber				
Hardwood Sawtimber		MMBF	3.6 (3.6)	3.6 (3.6)
Hardwood Pulpwood		MMBF	2.3 (2.3)	2.3 (2.3)
Wildlife				
Big-Game Hunting		M WFUD	19 (17)	23 (22)
Small-Game Hunting		M WFUD	15 (15)	17 (17)
Non-Game		M WFUD	14 (13)	14 (13)
Fishing		M WFUD	66 (66)	75 (73)

TABLE 4-18 Practices for Management Area 6.1

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Area Construction			
Other Forest Areas			
Campground	# of areas[1]	0 (0)	1 (1)
Boat Launch	# of areas	2 (2)	0 (0)
Dispersed Recreation Trail Construction			
Pedestrian	miles	1.8 (1.7)	2 (2)
Motorized-Summer	miles	2.2 (2.2)	2.2 (2.2)
Wildlife and Fish Habitat Improvement			
Wildlife Habitat Improvement	acres	589 (581)	772 (755)
Wildlife Structures	# of struct.	3 (3)	3 (3)
Fish Structures in Lakes	# of struct.	80 (80)	80 (80)
Timber Practices for Wildlife			
Final Harvest	acres	300 (300)	300 (300)
Thinning or Selection Cut	acres	700 (700)	700 (700)
Herbicide	acres	170 (170)	170 (170)
Fertilization	acres	180 (180)	180 (180)
Fencing	acres	36 (36)	36 (36)
Planting	acres	15 (15)	15 (15)
Site Prep for Natural Regeneration	acres	300 (300)	300 (300)
Road Construction	miles	1.5 (1.5)	1.5 (1.5)
Road Reconstruction	miles	.6 (.6)	.6 (.6)

1 Unit of measure for developed recreation area construction is not the annual average but the number of areas to be completed within the decade.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 6.1
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management Planning

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

The current aspen component should be retained.

Within aspen inclusions, 20 percent of the area should be in the 0-9 year age class, and 20 percent of the area should be in the 10-19 year age class. Regeneration cuts should be relatively small (up to 10 acres in size).

Regeneration cutting of aspen should be done during the dormant season. Retain at least one downed log in each regeneration cutting. Each such log should be more than 10 inches in diameter.

Old growth habitat should be provided on a minimum of 10 percent of the area and should comprise at least 100 of each 1,000 acres.

Retain the following snags per acre:

Tree Size	No. Snags
10" to 16" DBH	3
18" to 24" DBH	3
Greater than 24" DBH	3

2300 RECREATION MANAGEMENT

Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed where appropriate to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences.

Provide opportunities for a semi-primitive motorized ROS class recreation experience. The roads necessary for wildlife management make the recreation setting a motorized class. Occasionally, local roads will remain open for access or to provide ORV opportunities. Hiking, skiing, hunting, and mountain biking will be encouraged on closed roads.

Three dispersed recreation management intensities were options within this area which varied by quantity and quality of trail building and recreation management.

- Low Intensity is defined as maintaining the current investments. We would maintain the existing trail system and would not develop any new trails.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity established the upper limit on trail densities for each prescription by the respective Recreation Opportunity Spectrum (ROS) class.

If high intensity oil and gas development occurs in this management area, we will make no new recreation investments. Manage using a low recreation management intensity.

The output objectives and the proposed and probable practice amounts are a result of the high intensity being selected.

Recreation Sites

Recreation sites may be provided at development scale 3 or less. Some of the reservoir campgrounds which can be reached only by boat are within this management area. Generally these sites will be less than 50 campsites, will have vault toilets, carry-in and carry-out garbage policy, and hand pump water supply.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Trails

*Trail management will be compatible with the ROS objective of semi-primitive motorized.

Trail types appropriate to this management area are:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

The choice of which type to construct will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provide a full range of experiences.

*Off-Road Vehicles (ORV)

Off-road vehicle trails will not be designated in either the Minister Valley or Clarion River undeveloped areas. The Minister Valley Area is that portion of Management Area 6.1 which is located in the Minister Creek Valley north of State Route 666. The Clarion river Area is that portion of Management Area 6.1 along the Clarion River that is east of the powerline which goes to Portland Mills and south of Township Road T-307 and LR 24002 between Hallton and Ridgway.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Even-aged and uneven-aged silvicultural systems will be used to achieve the wildlife and recreation management objectives.

Even-aged management will be used to benefit wildlife by increasing horizontal habitat diversity. It fulfills important habitat requirements for the wild turkey, black bear, white-tailed deer, management indicator species, and a variety of other small-game and non-game species. It may be used also for increasing visual diversity and providing viewpoints for recreationists in desirable locations.

Uneven-aged management will be used to benefit wildlife by increasing mast and browse production, improving tree species composition and diversity, and increasing vertical habitat diversity. It will be used where cutting is planned in visually sensitive areas to provide a continuous canopy or visual variety in recreation travelways and use areas.

Harvesting Cutting Methods

Seasonal restrictions will occur to protect or manage the featured wildlife species and/or provide non-motorized recreational opportunities.

Temporary Openings Created by the Application of Even-Aged Silviculture

Temporary openings created by even-aged management will usually not exceed 20 acres. In the following cases, the size may exceed 20 acres:

- When consistent with wildlife and recreation objectives, the size may be as large as 25 acres;
- Where larger units, not to exceed 40 acres, will produce a more desirable combination of net public benefits;
- On an individual sale basis after 60 days public notice and review by the Regional Forester;
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Creation and size definition of temporary openings will be governed by the wildlife management objectives.

Frequency of Entry and Intensity

Timber harvesting will be necessary to achieve the wildlife management objectives. Sales will be scheduled to improve wildlife habitat, and the treatments will be based on an inventory of the existing habitat conditions. The timber harvest will vary in intensity within this management area to achieve both the wildlife and recreation management objectives.

The earliest age for regeneration cutting by timber type and management period is the following:

Timber Type	Minimum Rotation Age by Management Period (Decade) 1-2	3	4-15
Northern Hardwoods (Beech/Hemlock)[1]	120	120	120
Northern Hardwoods (miscellaneous)[2]	90	100	120
Allegheny Hardwoods	≥80	≥100	≥100
Oak	≥80	≥100	≥120
Aspen	40	40	40
Conifers (plantations)	100	100	100

Firewood

Firewood will be available for public use only when its removal is compatible with the wildlife management objective for the stand. Only designated material may be removed for fuelwood purposes.

1 Stands comprised of a plurality of Beech or Beech/Hemlock basal area.
2 Stands not comprised of a plurality of Beech or Beech/Hemlock.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.
2. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds, if the option is not taken.

Timber Stand Improvement

The improvement of stands of timber will be based upon wildlife or recreation management objectives. For example, this technique may be utilized to increase mast production, improve species composition and diversity, alter vertical stand structure, or improve visual quality. This activity may be conducted non-commercially or commercially.

Reforestation

Reforest all areas which receive a final harvest cut except where the objective is to create a permanent opening.

2600 WILDLIFE HABITAT MANAGEMENT

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

Wildlife

Three wildlife management intensities were options within this area which varied by quantity and quality of habitat development.

- Low Intensity maintains the current investments with no new habitat development.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity conforms with achieving the upper limit of the featured species population range. These upper limits are consistent with those specified in recent research literature, modified slightly based on our professional knowledge of local conditions.

The output objectives and the proposed and probable practice amounts are the result of the high intensity being selected.

Habitat improvement should be directed toward production of turkey, bear, cavity-nesting birds, and cavity-nesting mammals.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Wildlife habitat management will provide a minimum of five percent and a maximum of 10 percent in permanent openings and other types of turkey brood habitat. Most of this acreage will be comprised of shrub type openings, savannahs, and rights-of-way.

- Maintain openings less than 20 acres in size unless the percent available exceeds the maximum. Some existing fields over two acres in size may be planted with fruit-bearing trees and shrubs.

- Brood habitat for turkeys less than three weeks old can be managed in stands up to 80 acres in size. This unique habitat contains certain ground vegetation, vertical stand structure, and timber stocking densities.

- New permanent openings created will range in size from one to five acres.
- Spacial distribution should usually be 1/4 to 1/2 mile apart and should not exceed one mile.
- Openings will be seeded to non-native grasses and legumes to improve turkey habitat in selected locations; however, most openings will be managed in native grasses, forbs, and shrubs.
- Selected areas may be developed adjacent to sawtimber size coniferous cover to provide turkey wintering areas.

    . These areas will be located at elevations less than 1,800 feet and preferably on south slopes or valley bottoms.
    . Areas developed will range in size from 5-10 acres and should be located at one to two mile intervals adjacent to stream bottoms.
    . Food and cover-producing trees and shrubs that have persistent fruit will be planted where necessary to complement existing food-producing species.
    . If cover is scarce, plant two acres in conifers.

    . Provide at least a 200-yard wide buffer zone around them where adverse human activity and forest and land management practices are regulated.
    . Protective fencing will usually be required to protect seedlings from deer.

Manage recognized deer and turkey wintering areas to provide a sustained supply of winter thermal cover and food.

- Thermal cover will be dispersed and when vegetation composition goals are achieved, there will generally be no more than 20% of a management area in conifers. Rhododendron and mountain laurel will be provided in selected areas to provide additional thermal cover and habitat diversity.
- Seedling/sapling, pole timber, and sawtimber size classes of conifers will be provided.
- Favor hemlock and white pine where they occur.
- Manage timber stands within and adjacent to wintering areas to increase browse and mast production.

Manage habitat adjacent to selected warm-water (nontrout) streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Provide cover/forage edge adjacent to rights-of-way.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Regeneration cuttings will be small and well distributed. Poletimber and sawtimber will comprise a minimum of 70 percent of the forested acreage per 5,000 acres of habitat.

Provide special habitat requirements necessary to maintain viable populations of those species requiring isolation.

Provide wetland habitat to meet the needs of selected species.

Provide three to five live trees per acre containing nesting cavities and having a minimum DBH of 14 inches for cavity-nesting birds and mammals.

Within regeneration units, mark for retention the snags and cavity nesting trees (leave or reserve trees) which would meet utilization standards under the timber sale contract.

Road construction, reconstruction, and other resource management activities that would disturb turkeys during the nesting season, April 15 to June 15, should be scheduled to avoid a conflict to the extent practicable.

Roads should be located to avoid turkey brood habitat, as well as turkey and deer wintering areas.

Local roads may be open to hunters during the antlerless deer season, flintlock muzzleloader, and late archery seasons if overbrowsing is occurring and the road conditions are suitable.

Local roads will be closed to meet the Pennsylvania Fish Commission guideline for Wilderness Trout Stream management, i.e., stream must not be accessible to motorized vehicles at more than one point every two miles or can be limited to at most one point every two miles. Refer to the 2600 section of the Forest-wide standards and guidelines for the listing of these streams.

Roads and trails should be located in a manner to avoid turkey brood habitat and both turkey and deer wintering areas.

*Fish

*Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

2700 SPECIAL USES

*Utility Transmission Corridors

*NOTE: See also 7700 Transportation System, Corridors.

*Permit those facilities that are required to serve recreational or administrative facilities. Exceptions will be considered on an individual basis.

*Utility Distribution System

*Approval of application for distribution systems crosssing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOLGY

Private Minerals

Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Mitigation measures may include gating roads, vegetative screening of facilities, and wildlife habitat improvement projects. Implementation of these measures will be negotiated with the oil/gas developers.

5100 FIRE MANAGEMENT

*Prescribed fire may be used to establish or maintain vegetation for wildlife.

*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.

5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource management objectives.
7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES	Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs or hand pumps. *Solid Waste *Emphasize and promote use of the carry-in/carry-out method of disposal. Landfill disposal sites will not be provided unless other more compatible alternatives are exhausted including private land. Effluents Sewage systems include vault toilets only.
7700 TRANSPORTATION SYSTEM	*Collectors and local roads will be designed, constructed, and managed for transporting forest products and supporting administrative use. *Roads may be closed to public use or restricted by vehicle type or season of use. *Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic. *All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be obliterated.

Roads leading to and within small-scale developed recreation areas will be designed and maintained to a standard applicable to the site.

Forest Service road density will range from one to three miles per square mile in this management area.

Local roads will be Traffic Service Level (TSL) "D". These local roads will be closed to public traffic.

New road construction in this management area will be restricted to TSL "D". Existing roads may be reconstructed, but to no higher a standard than TSL "D".

ORV use will not be designated on existing roads within Minister Valley (Management Area 6.1 north of State Route 666) or Clarion River (Management Area 6.1 east of powerline near Portland Mills and south of Township Road 307 and LR 24002) areas. No new road construction will occur in these areas either.

Description for Management Area 6.2 (20,000 acres)

This management area produces hardwood sawtimber and a setting suitable for dispersed non-motorized recreation. The timber activities will occur in a ten-year, intensive management period which occurs once every 40 years. Dispersed recreation activities will be emphasized during the remaining 30 years of the 40-year cycle.

The primary purpose is to:

- Provide a sustained yield of Allegheny hardwood and oak sawtimber using even-aged management.
- Emphasize turkey and bear in all timber types.
- Provide a semi-primitive non-motorized setting with opportunity for a variety of dispersed non-motorized recreation experiences.

The 20,000 acres will be spread over four blocks, each being about 5,000 acres in size. Intensive timber management will be practiced on each block using a rotating schedule. Only one block will be entered each decade with the remaining three blocks providing a SPNM recreation experience.

The Forest will be Allegheny hardwood or oak stands. Even-age stands will be distributed throughout the area, and sizes will range from seedling to mature sawtimber. Modification of the natural appearing landscape will be evident due to the timber management activities on portions of the area. Although not contiguous, about 25 percent of the area will be cut in each intensive management period.

State, township, and Forest Service administered arterial and collector roads may form, or be adjacent to, but not within, the boundary of this management area. Forest Service local roads, Traffic Service Level (TSL) "C", will be open to all public traffic during the 10-year intensive management period with certain restrictions for wildlife. Forest Service local roads, TSL "D", will be closed to all public traffic, except for certain exceptions. During the 30-year extensive period, all Forest Service adminstered roads will be revegetated with no traffic allowed on them (public or administrative).

A system of roads and trails for non-motorized use will provide access within the area.

Recreational facilities and structures will be limited to those necessary to provide access to the area such as non-motorized trails, trail signs, and primitive cleared and leveled campsites with fire pits and, if necessary, pit toilets.

Utility corridors and low intensity development of shallow oil and gas fields may be evident within the area.

The following types of management activities will occur during the 10-year intensive management period: timber harvesting and the hauling of forest products; road and trail construction and maintenance.

During the 30-year semi-primitive non-motorized period, activities may include trail construction and maintenance, wildlife, habitat improvement, and timber management activities using manual methods.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Recreational opportunities will offer a moderate degree of challenge, risk, and interaction with the environment. These activities may include backpacking, hiking, cross-country skiing, hunting, fishing, and primitive dispersed camping.

Activities, such as right-of-way maintenance, oil/gas well hydrofracturing, drilling and maintenance, may occur but will be a minor part of the total activity in the area.

TABLE 4-19 Output Objectives for Management Area 6.2

Output by Management Problem	Unit of Measure	Average Annual Planned Amount Decade 1 D (D2)	Projected Decade 2 D (D2)
Dispersed Recreation Opportunities			
Semi-Primitive, Non-Motorized	M RVD	20 (20)	26 (26)
Timber Management[1]			
Hardwood Sawtimber	MMBF	2 (2)	2 (2)
Hardwood Pulpwood	MMBF	5.6 (5.7)	5.6 (5.7)
Wildlife			
Big-Game Hunting	M WFUD	6.4 (6.4)	6.8 (6.8)
Small-Game Hunting	M WFUD	.8 (.8)	1.5 (1.5)
Non-game	M WFUD	1.2 (1)	1 (1)
Fishing	M WFUD	2 (2)	2 (2)

TABLE 4-20 Practices for Management Area 6.2

Management Practice	Unit of Measure	Average Annual Planned Amount Decade 1 D (D2)	Projected Decade 2 D (D2)
Dispersed Recreation Trail Construction	miles		
Pedestrian	miles	.6 (.6)	.2 (.2)
Timber Practices[1]			
Final Harvest - Clearcuts	acres	8 (8)	8 (8)
Final Harvest - Shelterwood	acres	72 (72)	72 (72)
Thinning	acres	340 (340)	340 (340)
Timber Stand Improvement	acres	34 (34)	34 (34)
Herbicide	acres	45 (45)	45 (45)
Fertilization	acres	64 (64)	64 (64)
Fencing	acres	10 (10)	10 (10)
Planting	acres	5 (5)	5 (5)
Site Preparation	acres	40 (40)	40 (40)
Road Construction	miles	.7 (.7)	.7 (.7)
Road Reconstruction	miles	.3 (.3)	.3 (.3)
Wildlife and Fish Habitat Improvement			
Wildlife Habitat Improvement	acres	107 (107)	69 (69)
Wildlife Structures	# of struct.	1 (1)	0 (0)

1 Timber sales must be developed and sold early in the planning period in order for actual harvesting activities to be completed by the end of the decade. The annual averages will therefore not represent the actual implementation strategy.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 6.2
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

Retain five snags per acre greater than 10 inches DBH.

Old growth habitat (timber at pathological rotation and older) will be provided on a minimum of five percent of the area.

2300 RECREATION MANAGEMENT

Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Feature primarily semi-primitive non-motorized ROS class recreation opportunities.

Three dispersed recreation management intensities were options within this prescription which varied by quantity and quality of trail building and recreation management.

- Low Intensity is defined as maintaining the current investments. We would maintain the existing trail system and would not develop any new trails.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity established the upper limit on trail densities for each prescription by the respective Recreation Opportunity Spectrum (ROS) class.

The output objectives and the proposed and probable practice amounts are a result of the intensities selected.

Emphasize semi-primitive non-motorized opportunities during 30 years of the 40-year cycle.

Administrative motorized vehicle use may be permitted only under emergency situations or as necessary for infrequent needs, such as construction and/or pumping vault toilets. Frequent use for routine maintenance wouldn't be permitted.

Provide roaded natural dispersed recreation opportunities during the 10-year harvesting period.

Recreation Sites

Construction of new sites may occur at development scale 1 or 2.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Trails

*Trail management will be compatible with the ROS objective of semi-primitive non-motorized.

Trail types appropriate to this management area are:

Pedestrian Summer
Pedestrian Winter
Equestrian Summer

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include two difficulty classes of More and Most Difficult to provide a range of experiences within the semi-primitive non-motorized ROS class.

Interpretation

At trailheads into the management area, personal contact, brochure racks, and bulletin boards will be utilized to interpret the environment and inform users about proper use of the area.

Emphasize the dual objective of the area and inform users what to expect when visiting the area in each management cycle.

Off-Road Vehicles (ORV)

Use of motorized vehicles off roads will not be permitted. Exceptions include use of administrative vehicles, emergency vehicles, and use authorized by permit, contract, or outstanding private rights.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	PR	PR	PR
Class B	R	R	PR	R	PR	PR	PR
Class C	R	R	PR	R	PR	PR	PR

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Even-aged will be the featured silvicultural system.

Uneven-aged management may be an option on inclusions such as riparian areas, wet soils, or visually sensitive areas. Its use will be based on individual site analysis.

Harvest Cutting Methods

Seasonal restrictions may occur to protect or manage the featured species and/or provide non-motorized recreational opportunities.

*Temporary Openings Created by the Application of Even-aged Silviculture

*Temporary openings created by even-aged management will generally not exceed 25 acres, except as provided below:

- where larger units, not to exceed 40 acres, will produce a more desirable combination of net public benefits.
- on an individual sale basis after 60 days public notice and review by the Regional Forester
- as a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Management Intensity and Utilization

Limit timber harvest for each block to one 10-year period every 40 years. The entry schedule for decades 1-4 will be as follows:

(1) Ridgway
(2) Sheffield
(3) Bradford
(4) Marienville

Timber management practices not dependent on motorized vehicles may be scheduled at any time during the 40-year cycle.

Management intensities for each timber type include either one or two commercial thinnings.

Thinnings entries are at 40-year intervals. Earliest entry is age 40 and latest is 40 years prior to rotation.

Once the area has reached minimum rotation age, up to 33 percent of the Allegheny hardwoods and 25% of the Oak/Northern hardwood may be final harvested during each 10-year intensive management period.

Minimum rotation ages are:

Timber Type	Stocking/ Site Index	Exist	Regen
Oak	SI≥65	80	80
	SI≤65	80	80
High CAPS	45-74%	90	90
	≥75%	80	70
Low CAPS	45-74%	90	90
	≥75%	80	80

The minimum rotation age for each analysis area corresponds with the point where it has exceeded 95 percent of Culmination of Mean Annual Increment. This information comes from the FORPLAN yield tables. Minimum rotation ages vary depending on the management intensity, timber type, stocking/site index, and whether it is the existing or regenerated stand.

Firewood

Make wood residues available for fuelwood purposes during the 10-year intensive management period.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds, if the option is not taken by the timber purchaser.
2. Exclude pulpwood from all commercial treatments. Only sawtimber will be sold, cut, and removed from the sale area. To complete the silvicultural prescription, cut or shear large saplings promptly after completing the commercial operations (using KV funds, if available). Consider all aspen as pulpwood until such time as a viable market for aspen sawlogs becomes established.

3. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.

2600 WILDLIFE MANAGEMENT

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

Three wildlife management intensities were options within this area which varied by quantity and quality of habitat development.

- Low Intensity maintains the current investments with no new habitat development.
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity conforms with achieving the upper limit of the featured species population range. These upper limits are consistent with those specified in recent research literature, modified slightly based on our professional knowledge of local conditions.

The output objectives and the proposed and probable practice amounts are a result of the intensities selected.

Specialized habitats and inclusions, within the management area, will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Habitat improvement should be directed toward production of turkey and bear.

Habitat improvement requiring use of motorized vehicles will be limited to the 10-year harvesting period.

Permanent openings will be provided on a minimum of one percent and a maximum of three percent of the area. They should range 1-10 acres in size, spaced approximately 1/2 to one mile apart.

- Maintain openings less than 20 acres in size unless the percent available exceeds the maximum. Some existing fields over two acres in size may be planted with fruit-bearing trees and shrubs.
- Openings may be seeded to non-native grasses and legumes to improve deer and grouse habitat in selected locations; however, most openings will be managed in native grasses, forbs, and shrubs.

Manage recognized deer and turkey wintering areas to provide a sustained supply of winter thermal cover and food.

- Thermal cover should be dispersed and when vegetation composition goals are achieved, there will generally be no more than 10 percent of a management area in conifers. Rhododendron and mountain laurel will be provided in selected areas to provide additional thermal cover and habitat diversity.
- Seedling-sapling, pole timber, and sawtimber size classes of conifers will be provided.
- Favor hemlock and white pine where they occur.
- Thin timber stands within and adjacent to wintering areas to increase browse and mast production.
- Where inadequate cover exists, establish conifer stands ranging from 10-50 acres in size.

Manage habitat adjacent to selected warm-water, non-trout streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Regenerate aspen inclusions to increase their age class diversity.

Provide cover/forage edge adjacent to rights-of-way.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Roads and trails should be located to avoid turkey brood habitat areas, as well as turkey and deer wintering areas.

Local roads will be closed for the bear and fall turkey hunting seasons when necessary to meet the management objectives for these species.

Retain fruit and mast-producing tree and shrub species and improve their productivity by utilizing management techniques such as release, pruning, and fertilizing. In selected areas, perform replacement planting of such species to restore productivity of the site. Protective fencing may be required to protect seedlings from deer.

Provide three to five live trees per acre having a minimum DBH of 14 inches and containing nesting cavities for cavity-nesting birds and mammals.

Within regeneration units, mark for retention the snags and cavity-nesting trees (leave or reserve) which would meet utilization standards under the timber sale contract.

Road construction and resource management activites that would disturb turkeys during the nesting season (April 15 to June 15) should be scheduled to avoid conflicts to the extent possible.

*Fish

*Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

2700 SPECIAL USES MANAGEMENT

Utility Transmission Corridors

*Permit those facilities that are required to serve recreational or administrative facilities. Exceptions will be considered on an individual basis.

*Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands, such as utility rights-of-way serving individual residences, will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOGY	Private Minerals Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this management area. Mitigation measures may including vegetative screening of facilities, gating and closing of roads during the non-motorized period, and removal of unused equipment. Implementation of these measures will be negotiated with the oil/gas developers.
5100 FIRE MANAGEMENT	*Prescribed fire may be used to establish or maintain vegetation for wildlife. *Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource managment objectives.
7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs and hand pumps. *Solid Waste *Emphasize and promote use of the carry-in/carry-out method of disposal. Landfill disposal sites will not be provided unless other more compatible alternatives are exhausted including private land. Effluents Sewage systems may include vault toilets.

7700 TRANSPORTATION SYSTEM

Roads

*Collectors and local roads will be designed, constructed, and managed for transporting forest products and supporting administrative use.

*Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed.

Roads leading to and within small-scale developed recreation areas will be designed and maintained to a standard applicable to the site.

State, township, and Forest Service administered arterial and collector roads may form, or be adjacent to, but not within, the boundary of this management area.

Forest Service road density will range from one and one half to four miles per square mile in this management area.

Local roads will be either Traffic Service Level (TSL) "C" or "D". This decision will be tied to the specific area and resources being accessed. Traffic Service Level "D" roads will be closed to all public traffic, except as specifically allowed for within the project Environmental Analysis (EA) for the area. Traffic Service Level "C" roads will be open to public traffic, with restrictions as indicated in the Standards and Guidelines for resource areas.

During the 30-year extensive management period, all local roads will be revegetated and closed to all traffic (public and administrative), except as needed for private oil and gas administration and development.

Description for Management Area 6.3 (1,000 acres)

This management area is currently known as Buzzard Swamp Wildlife Management Area. Wildlife habitat improvement and maintenance is done through a cooperative agreement with the Pennsylvania Game Commission.

It is dominated by large savannah-like areas, open bodies of water, and vegetation dependent upon riparian conditions intensively managed to produce high populations of associated wildlife species.

The primary purpose is to:

- Intensively manage for wildlife species which require riparian habitat, including waterfowl, furbearers, and warm-water fish.
- Emphasize dispersed recreation activities particularly hunting, fishing, and wildlife observation in a semi-primitive motorized recreation setting.

The area will continue to be dominated by open bodies of water and wetland vegetation. Large openings with scattered trees and food plots will be maintained on the drier sites, with small interspersed inclusions of aspen, other hardwoods, conifers, and/or shrubs.

State, township, and Forest Service administered arterial and collector roads may form, or be adjacent to, but not within, the boundary of this management area. Forest Service local roads, Traffic Service Level (TSL) "D", will be closed to all public traffic, except for certain seasonal exceptions for wildlife purposes.

Although some foot trails are provided within the area, the majority of the trails into the area are provided by the road system.

Recreational facilities will be limited to those necessary to provide access into the area. Facilities may include trails and parking lots. Primitive campsites may also be designated.

Utility corridors and low intensity development of shallow oil and gas fields may be evident.

Wildlife habitat improvement and maintenance work such as planting, fertilizing and mowing of food plots, shrub planting, and tree pruning may be evident. Trail construction and/or maintenance, road maintenance, administrative travel, and law enforcement activities will occasionally occur.

Recreational opportunities will generally be associated with the wildlife resources and may include hiking, wildlife photography, wildlife observation and identification, fishing, trapping, hunting, and camping.

A variety of game and non-game wildlife species may be seen that are characteristic of open and/or wetland areas including: deer, shorebirds, woodchucks, non-game birds, raptors, reptiles, and amphibians.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Activities, such as right-of-way maintenance, oil/gas well hydrofracturing, drilling and maintenance, may occur but will be a minor part of the total activity in the area.

TABLE 4-21 Output Objectives for Management Area 6.3

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Dispersed Recreation Opportunities					
Semi-Primitive Motorized	M RVD	1	(1)	1	(1)
Wildlife					
Big-Game Hunting	M WFUD	.2	(.2)	.2	(.2)
Small-Game Hunting	M WFUD	.4	(.4)	.4	(.4)
Non-game	M WFUD	.1	(.1)	.1	(.1)
Fishing	M WFUD	1.3	(1.3)	1.3	(1.2)

TABLE 4-22 Practices for Management Area 6.3[1]

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Improvement	Acres	8	(8)	10	(10)
Wildlife Structures	# of Structures	1	(1)	1	(1)

1 Management practices are funded, scheduled, and implemented by the Pennsylvania Game Commission under cooperative agreement with the Allegheny National Forest. The Forest plans no significant investments in the area during the first two decades.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 6.3
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

In forested areas, retain five snags per acre greater than 10 inches DBH.

2100 ENVIRONMENTAL MANAGEMENT

Pesticide Use

Use of pesticides for control of vegetation, insects, or disease is generally not appropriate.

2300 RECREATION MANAGEMENT

*Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed, where appropriate, to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences.

Provide semi-primitive motorized ROS class recreation experience. The roads necessary for wildlife management make the recreation setting a motorized class even though the public will not be operating vehicles in these areas.

Pedestrian use will be encouraged on the closed roads.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Trails

*Trail management will be compatible with the ROS objective semi-primitive motorized.

Trail types appropriate to this management area are:

Pedestrian Summer
Pedestrian Winter

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provide a full range of experiences.

The choice of trail type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Interpretation

At trailheads into the management area, personal contact, brochure racks, and bulletin boards will be utilized to interpret the environment and inform users about proper use of the area.

Off-Road Vehicles (ORV)

Use of motorized vehicles off roads will not be permitted. Exceptions include use of administrative or emergency vehicles or use authorized by permit or contract.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Silvicultural systems to be used will be consistent with the wildlife and recreation objectives.

Uneven-aged management system may be an option on riparian areas, wet soils, visually sensitive areas or as habitat required by riparian species.

Even-aged management may be an option on aspen stands for grouse and deer production, for providing visual variety, or for providing views for recreationists. Choice of system will be based on individual site analysis and primary objectives.

Harvesting Cutting Methods

Seasonal restrictions may occur to protect or manage the featured wildlife species and/or provide non-motorized recreational opportunities.

*Temporary Openings Created by the Application of Even-aged Silviculture

*Temporary openings created by even-aged management will generally not exceed 25 acres, except as provided below:

- Where larger units, not to exceed 40 acres, will produce a more desirable combination of net public benefits.
- On an individual sale basis after 60 days public notice and review by the Regional Forester.
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Frequency of Entry and Intensity

Timber harvest will occur primarily to benefit wildlife and recreation. Timber stands involved will typically have low volume per acre and very low quality. Removal of timber products by timber sale contract is encouraged when acceptable amounts of merchantable sized timber exist and can be economically removed.

Firewood

Firewood gathering is not permitted in this management area.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1. Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary to meet the cutting prescription.

2. Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional. Cut pole timber with KV funds, if the option is not taken.

3. Include all merchantable sawtimber within designated clearcuts and shelterwood removals. Require that all such material be cut and removed from the sale area. Cut or shear poles and large saplings promptly after the commercial operations are complete (using KV funds, if available). All aspen will be considered as pulpwood until such a time as a viable market for aspen sawlogs becomes established.

Reforestation and Timber Stand Improvement

Such activities will normally not occur except when necessary to be consistent with wildlife habitat and recreation objectives and when necessary to protect adjacent land owners from pests.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Riparian Area Management

In this management area, the important riparian areas are open water and wetlands adjacent to impoundments, potholes, and beaver ponds.

Management will emphasize riparian-dependent values associated with open water and wetlands. These values include waterfowl habitat, beaver habitat, warm-water fishery, and associated recreational opportunities, such as wildlife viewing, nature photography, hiking, hunting, and fishing.

The only facilities that will be located in riparian areas within this management area are those that enhance the above-named riparian-dependent values. Such facilities might include hiking trails, cross-country skiing trails, or interpretive signs and trails.

See 2600 for standards and guidelines relating to impoundment management and wildlife habitat management.

2600 WILDLIFE MANAGEMENT

Wildlife

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

*Solid Waste

*Emphasize and promote use of the carry-in/carry-out method of disposal.

Effluents

Sewage systems may include vault toilets.

7700 TRANSPORTATION SYSTEM

Roads

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be obliterated.

Roads leading to and within small-scale developed recreation areas will be designed and maintained to a standard applicable to the site.

Local roads will be Traffic Service Level "D". These local roads will be closed to public vehicle traffic.

Description for Management Area 6.4 (Approx. 23,100 acres)

This management area of approximately 23,100 acres was established through the Pennsylvania Wilderness Act of 1984. It contains portions of Cornplanter, Tracy Ridge, and Allegheny Front RARE II inventory areas as well as the section of the Allegheny Reservoir between Cornplanter and Tracy Ridge. See Figure 4-1.

The emphasis in this area is to provide a land condition with vegetation generally progressing through the natural succession process to mature or overmature hardwood forest.

The primary purpose is to:

- Preserve and protect the natural scenic, scientific, historic, archaeological, ecological, educational, watershed, and wildlife values.
- Provide for enhancement of dispersed semi-primitive motorized and non-motorized recreation opportunities.

As these areas will have only a limited amount of vegetative management activities designed to enhance wildlife habitat or to achieve recreation objectives, the Forest will generally progress through natural succession to a mature northern hardwood type. Scattered herbaceous, shrub, and conifer inclusions may be evident due to maintenance of wildlife habitat.

Some abandoned roads and facilities are still evident from early oil and gas and logging production; i.e., old roads, railroad grades, pipelines, oil well sites, power houses, rodlines, and cleared rights-of-way. The area will continue to slowly revert to a natural Forest condition.

State, township, and Forest Service administered arterial and collector roads may form, or be adjacent to, but not within, the boundary of this management area. All other roads will be closed except for roads serving developed recreation sites.

Recreational facilities will generally be limited to those necessary to provide access into the area or protect the resources, such as trails, trailhead facilities, and primitive campsites, vault toilets, and spring or hand pump water systems.

Utility corridors and development of oil and gas fields may be evident within the area.

Seasonal wildlife habitat improvement and maintenance work may include such activities as food plot maintenance, shrub and conifer planting, and timber thinning. Trail construction and maintenance will occasionally be evident. Administrative and law enforcement activities will occur.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Recreational opportunities will include dispersed activities, such as cross-country skiing, backpacking, hiking, fishing, hunting, trapping, motor boating, camping, and water skiing.

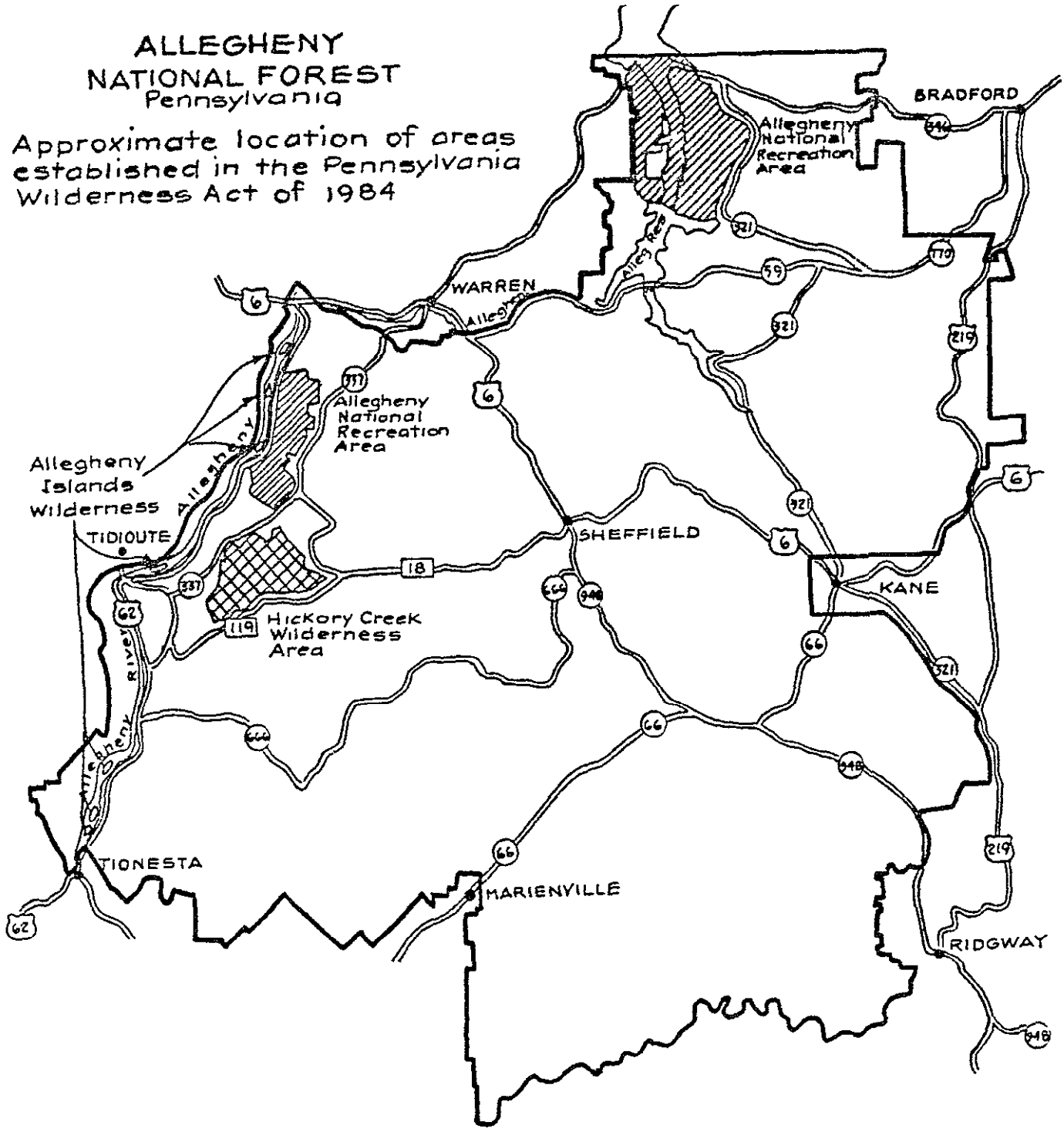


Figure 4-1. Location of Wilderness and National Recreation Areas

Table 4-23 Output Objectives for Management Area 6.4

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Opportunities			
Semi-Primitive Motorized	M RVD	33 (33)	35 (35)
Roaded Natural	M RVD	13 (13)	13 (13)
Dispersed Recreation Opportunities			
Semi-Primitive Motorized	M RVD	71 (68)	75 (73)
Wildlife			
Big-Game Hunting	M WFUD	5 (4)	5 (5)
Small-Game Hunting	M WFUD	4 (4)	4 (4)
Non-game	M WFUD	4 (4)	4 (4)
Fishing	M WFUD	47 (46)	56 (55)

Table 4-24 Practices for Management Area 6.4

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Area Construction			
Other Forest Areas			
Campgrounds	# of areas	1 (1)	0 (0)
Dispersed Recreation Trail Construction			
Pedestrian	miles	.4 (.4)	.5 (.4)
Wildlife and Fish Habiat Improvement			
Wildlife Habitat Imp. & Mtnce.	acres	132 (130)	170 (169)

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 6.4

ALLEGHENY NATIONAL RECREATION AREA

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

Vegetative management shall be done only to maintain or enhance existing recreation, wildlife, or watershed values, except to facilitate private mineral resource exploration and development.

2300 RECREATION MANAGEMENT

Opportunities

Protect and enhance the existing opportunities for semi-primitive motorized and non-motorized recreation experiences.

Semi-primitive motorized ROS class recreation experiences will be emphasized in the NRA.

Non-motorized recreation opportunities will be emphasized on the interior of the NRA in the existing undeveloped portions.

Public motorized vehicle use will not be permitted except for motorized use on the Allegheny Reservoir and vehicles in the developed recreation areas.

Recreation Sites

With the exception of existing sites, recreation sites may be provided at development scale 3 or less. Some of the reservoir "boat-to" campgrounds are within this management goal. Generally these sites will have less than 50 campsites, with vault toilets, carry-in and carry-out garbage policy, and hand pump water supplies.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Where possible, developed recreation facilities (permanent campgrounds, etc.) should be limited to those general areas where they already occur and should not be planned in the more remote and wild areas.

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

Trails

*Trail management will be compatible with the ROS objectives.

Trail types appropriate to this management area are:

Pedestrian Summer
Equestrian Summer
Pedestrian Winter

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies, and plans of private sector at the time of implementation.

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provided a full range of experiences.

Interpretation

At trailheads into the management area, personal contact, brochure racks, and bulletin boards will be utilized to interpret the environment and inform users about proper use of the area.

Off-Road Vehicles (ORV)

*Use of motorized vehicles off roads will not be permitted in the NRA. Exceptions include use of administrative vehicles, emergency vehicles, use authorized by permit or contract (relating to outstanding private OGM rights).

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

2400 TIMBER MANAGEMENT

Silvicultural Systems

Timber will be harvested only to achieve wildlife and recreation management objectives.

Uneven-aged management or salvage may be an option used to maintain browse and mast production around existing habitat improvements to maintain continuous canopy in visually sensitive areas, or to provide visual variety in recreation travelways or use areas.

Even-aged management may be an option for creating or maintaining permanent openings for wildlife; for increasing visual variety; and providing viewpoints for recreationists.

*Temporary Openings Created by the Application of Even-aged Silviculture

Temporary openings created by even-aged management will generally not exceed ten acres, except as provided below:

- On an individual sale basis after 60 days public notice and review by the Regional Forester

- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Frequency of Entry and Intensity

A limited amount of commercial timber sales may be necessary to achieve wildlife management objectives.

Timber harvest is unscheduled and will vary in intensity.

Firewood

Firewood may be gathered for use within the NRA boundary. If significant resource damage is expected, gathering may be restricted by Forest Supervisor order.

Reforestation

Reforestation will be done to meet wildlife and recreation objectives.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Riparian Area Management

Riparian areas will be managed to emphasize riparian-dependent resources which contribute to the objectives of this management area. Such resources include wildlife habitat; fish habitat in the Allegheny River, Allegheny Reservoir, and streams; and dispersed recreation opportunities. Appropriate activities in riparian areas may include wildlife and fish habitat improvement, and trail construction.

Public use of specific areas may be limited to protect water quality.

Trails will be located to protect soil and water quality values.

2600 WILDLIFE HABITAT MANAGEMENT

*Provide wetland habitats to meet the requirements of management indicator species.

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Maintain or enhance existing permanent openings and grasslands in upland forest areas to meet wildlife needs.

Openings may be planted with fruit producing trees and shrubs, although most will be managed in native grasses, forbs, and shrubs.

Protect and enhance spring seeps and other water areas including the adjacent vegetation that are critical to wildlife.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Permit only those facilities that are required to serve recreational or administrative needs. Exceptions will be considered on an individual basis.

*Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOGY

Federal Minerals

Federally owned oil, gas, and other minerals within the NRA have been congressionally withdrawn from leasing consideration. Rock sources within the NRA will not be used or developed.

Private Minerals

The goal of Forest Service administration of private mineral development is to reduce the impacts of development on visual quality, recreation opportunities, watershed values, and wildlife habitat, while honoring private rights.

At least 60 days in advance of proposed development, the developer will provide the Forest Service with a Plan of Operations. The Plan of Operations must be approved by the Forest Service before any surface disturbing activities begin. In addition to those items specified in the forest-wide standards and guidelines, the Plan will address the following:

Schedule of Activities and Staging of Operations

The staging of well construction will be provided in the Plan of Operations. At any one time, no more than five well sites and accompanying access roads will be cleared in advance of actual drilling operations. Each five-well package will be handled as a single timber sale payment unit.

In the vicinity of developed recreation sites or areas receiving heavy recreation use, the Forest Service may impose restriction on the hours, days, or season of operation in order to reduce impacts on recreationists.

Water for hydrofracturing will be stored in tanks.

Production and Collection Facilities

Visual impacts of facilities will be reduced to the extent possible by sitting, vegetative screening, or other methods. All above-ground facilities will be painted with earth-tone colors. Construction materials will meet visual quality requirements.

Tank batteries will be located outside the NRA where possible. Tanks and separators will be located on one site in the development. Tank hatches will be locked.

Where possible, all utility and collection lines will be buried at a minimum depth of three feet and marked with Terra tape or its equivalent. Surface lines may be permitted if boulders, topography, or other conditions make burial impractical or infeasible. Lines will be located in road rights-of-way. Lines may be located outside of rights-of-way if now new corridor clearing is required for their installation.

Pump jacks will be powered by electric motors and signed to warn the public of automatic operation. Gasoline powered motors may be used, in limited cases, if environmentally preferred.

Natural gas that is not utilized on the development or marketed will be flared.

Methods for Waste Disposal

All produced water will be contained in tanks and disposed of outside the NRA by state-approved methods.

Stumps will be buried in an approved location or removed from the NRA. Slash will be lopped to within three feet of the ground and scattered.

Excess or unused materials, litter, and trash will be promptly removed from the development and disposed of properly.

Surface Restoration Plan

The goal of surface restoration is to restore the natural landform and facilitate the establishment of forest vegetation.

A bond to guarantee stabilization and final restoration of disturbed areas will be required on all developments.

Restoration plans will include removal of all equipment and facilities, recontouring of roads and well sites, and revegetating all disturbed areas. In order to restore forest vegetation, methods such as scarification, fertilizing, mulching, liming, direct seeding, or planting shrubs and trees may be necessary. Native plant species will be used when seed or planting stock is available.

Any equipment or facility not used for a period of one year must be removed by the operator within 90 days of notification.

5100 FIRE MANAGEMENT	*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	Surface Ownership Land within the National Recreation Area is not available for exchange.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource management objectives.
7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES	*Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs or hand pumps. Effluents Sewage systems include vault toilets only. Solid Waste *Landfill disposal sites will not be provided.
7700 TRANSPORTATION SYSTEM	*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed. State, township, and Forest Service administered arterial and collector roads may form, or be adjacent to, but not within, the boundary of these areas, except for those needed to satisfy private legal rights. Existing local roads will be managed as Traffic Service Level "D". These local roads will be closed to public traffic with the following exception: - Roads leading to and within developed recreation areas will be designed and managed to a Traffic Service Level applicable to the site.

Description for Management Area 7 (1,000 acres)

The emphasis in this area is to provide high-density, destination-type recreation developments within a forest environment.

The primary purpose is to:

- Provide high-density, self-contained forest recreation developments in a rural setting.
- Vegetation management will ensure that the long-term viability, safety, and attractiveness of the area will continue throughout the anticipated life of the development.

Vegetation will be intensively managed to provide an attractive setting for the intended use, and it will generally consist of native species.

Facilities for motorized use and parking will be available. Facilities will be designed for use by a large number of people and will be provided for special activities. Away from the developed sites, facilities will accommodate moderate user density.

Facilities, structures, and utilities will be very evident, but will be designed to be compatible with the values that make the area attractive to the users. Oil and gas development will not generally occur within these highly developed sites.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads will be Traffic Service Level (TSL) "A to C" and will be open to all public traffic except for certain seasonal restrictions for recreation purposes.

Large numbers of users will be present, human sights and sounds readily evident, and the interaction between users will be moderate to high. Resource modification and utilization practices will be primarily to enhance specific recreational activities, to maintain vegetative cover and to stabilize soil.

This goal may have activities and facilities such as auto camping, swimming, motor boating, picnicking, lodges, and food services.

Table 4-25 Output Objectives for Management Area 7

Output by Management Problem	Unit of Measure	Average Annual Planned Decade 1 D (D2)	Amount Projected Decade 2 D (D2)
Developed Recreation Opportunities			
Rural	M RVD	419 (419)	432 (432)
Wildlife			
Fishing	M WFUD	.3 (.3)	.3 (.3)

Table 4-26 Practices for Management Area 7

Management Practice	Unit of Measure	Average Annual Planned Decade 1 D (D2)	Amount Projected Decade 2 D (D2)
Developed Recreation Area Construction[1]			
Allegheny Reservoir Area			
Campgrounds	# of areas	1 (1)	1 (1)
Kinzua Beach Motel/Restaurant Complex	# of areas	1 (1)	0 (0)
Other Forest Areas			
Campgrounds	# of areas	0 (0)	1 (1)

1 Specific facilities and improvements developed on a case-by-case basis during the design process. Read standards and guidelines for more information. Unit of measure for this practice is the number of recreation areas to be completed within the entire decade not an average annual amount.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 7
(An asterisk designates standards taken from the Eastern Regional Guide.)

2300 RECREATION MANAGEMENT

Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Feature Rural ROS class recreation opportunities.

Recreation Sites

Construction of new sites will occur at development scale 4 or 5. Sites will be larger than 50 campsites or 250 PAOT. The sites will usually have pressure water systems, sewage treatment plants, hot showers, paved service roads, and outdoor lighting.

All structures and facilities will be designed and located to maintain a natural or rustic appearance.

Structures will not be more than two stories high.

Natural building materials, such as stone and wood, will be used on the exterior of all structures.

Earth-tone colors will be used for all exterior finishes.

The visual quality objectives will be met primarily through vegetative screening of structures seen from a distance.

These sites may be developed and operated by the private sector under permit to the U. S. Government.

Trails

*Trail management will be compatible with the ROS objective.

Trail types appropriate for this management area are:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

The choice of trails to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include two difficulty classes of Easiest, and More Difficult to provide a range of experiences within the Rural ROS class.

Interpretation

In this area, manned interpretive and information facilities may be utilized to inform and educate Forest visitors.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	PR	PR	PR	M	M	M
Class B	PR	M	M	PR	M	MM	MM
Class C	PR	M	M	M	MM	MM	MM

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deteriortation and identify protective measures to be implemented.

*Emphasize development and interpretation of significant cultural resources to enhance recreation opportunities.

Interpretation may occur during the evaluation or the excavation of major sites, and the excavation may be featured as well as the findings of the evaluation or excavation.

2400 TIMBER MANAGEMENT

Silvicultural Systems

Timber will be managed for visual, recreational, and safety purposes in the developed area. Single tree selection and group selection will be emphasized.

Salvage of timber products may occur in developed areas.

Whole tree removal will be emphasized in developed areas.

A vegetative management plan should be developed for each area and address the size of temporary openings.

Timber harvest is unscheduled.

Harvesting may be restricted to periods of low recreation use to minimize user conflict.

Firewood

Fuelwood may be made available for public use.

Pulpwood

Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.

Reforestation and Timber Stand Improvement

These activities will usually not occur except when necessary to achieve the management objectives of the area or to protect adjacent land owners from fire or pests.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Intensive structural and nonstructural practices for erosion control should be used as necessary to prevent soil loss and water quality degradation in areas receiving heavy recreation use. Practices may include paving, terracing, gabion installation, rip-rapping, etc.

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage wildlife habitat to enhance visitor enjoyment.

Nest boxes for cavity-nesting bird species and squirrels may be provided.

Provide special viewing structures or interpretative trails when appropriate to enhance visitor enjoyment.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*NOTE: See also 7700 Transportation System, Corridors.

*Permit only those facilities that are required to serve recreational or administrative needs. Exceptions will be considered on an individual basis.

*Utility Distribution System

*Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND DEVELOPMENT

*Federal Minerals

Surface disturbing mineral development is generally not compatible with the resource objectives of this management area. This compatibility determination, however, will be based on a site specific analysis of each tract.

Private Minerals

Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Implementation

of these measures will be negotiated with the oil/gas developers. Mitigation measures may include:

- Location of support facilities such as tank batteries, separators, pipe yards, etc., outside management area.
- Use of techniques and equipment that can be put underground such as downhole pumping and buried utility lines and pipelines.
- Vegetative screening of well locations and roads and noise control measures.
- Removal of brine water from the management area.
- Removal of all unused equipment.

5100 FIRE MANAGEMENT

*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable State laws.

5400 LAND OWNERSHIP

Subsurface

Acquire or subordinate private subsurface interests in developed recreation sites where necessary to protect recreation values.

7300 BUILDINGS AND STRUCTURES

Buildings and structures may be provided to support resource management objectives.

7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES

Water Supply

*Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality.

Water systems may include springs, hand pumps, or electric pumps.

Effluents

Sewage Systems may include vault toilets, but will usually be flush systems and sewage treatments plants.

*Solid Waste

*Landfill disposal sites will not be provided.

7700 TRANSPORTATION SYSTEM

Roads

*Arterial roads, at a minimum, will be designed and constructed for transporting forest products and accommodating planned motorized recreation use, will be open and will be maintained to maintenance level III or higher.

*Local roads will be designed and constructed to be suitable for accommodating intensive recreation use and associated service vehicles.

*Roads may be closed to public vehicle use or restricted by vehicle type or season of use.

*Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed.

The local road standards applicable to this management prescription will be developed during the site design process.

Forest Service Local roads will be Traffic Service Level (TSL) "A to C" and will be open to all public traffic except for certain seasonal restrictions for recreation purposes.

Description for Management Area 8 (6,000 acres)

The emphasis in this management area is management of four special areas on the Forest: Tionesta Scenic Area (2,018 areas), Tionesta Research Natural Area (2,113 acres), Hearts Content Scenic Area (122 acres), and Kane Experimental Forest (1,650 acres). Except for the scenic areas, the activities are administered by the Northeastern Forest Experiment Station.

The primary purpose for Hearts Content Scenic Area and Tionesta Scenic Area is to:

- Protect the unique areas of national significance and provide dispersed recreation opportunities that emphasize the area's uniqueness
- Preserve the unique ecosystems for scientific purposes.

The primary purpose for Tionesta Research Natural Area is to:

- Preserve the unique ecosystem for scientific purposes.

The primary purpose for Kane Experimental Forest is to:

- Provide an area where we will conduct research to improve the benefits of forests.

The areas encompass many vegetative types from open fields to virgin timber stands.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads, Traffic Service Level (TSL) "C & D", will be closed to all public traffic except for certain exceptions for recreation purposes.

Recreational facilities and structures may be present but generally designed to be compatible with the natural surroundings. Facilities could range from primitive structures to highly developed sites, except in the Kane Experimental Forest and Tionesta Research Natural Area where none will exist.

Recreation and use will vary, from substantially unnoticeable to very evident. Evidence of human activities will vary depending on the area's purpose, but activity generally will be controlled to reduce adverse impacts on the sites.

Administrative activities could include timber, wildlife, and recreation management functions. The unique characteristics of these areas require that they be protected by law or administrative order. Law enforcement and associated administrative activities may be common within the areas.

Table 4-27 Output Objectives for Management Area 8

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Dispersed Recreation Opportunities			
Semi-Primitive Motorized	M RVD	4 (4)	4 (4)
Wildlife			
Big-Game Hunting	M WFUD	1.2 (1.2)	1.2 (1.2)
Small-Game Hunting	M WFUD	.2 (.2)	.2 (.2)
Non-Game	M WFUD	.2 (.2)	.2 (.2)
Fishing	M WFUD	.5 (.5)	.5 (.5)

Table 4-28 Practices for Management Area 8[1]

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Dispersed Recreation-Trail Construction	miles	0.5 (.5)	0 (0)

1 Applies only to the Tionesta and the Hearts Content Scenic Areas. Management practices for the Tionesta Research Natural Areas and Kane Experimental Forest are funded, scheduled, and implemented by the Northeastern Forest Experiment Station.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 8
(An asterisk designates standards taken from the Eastern Regional Guide.)

Management Area 8 consists of two subgroups, each composed of several areas with similar objectives, management activities, and outputs. Scenic Areas form one subgroup and Research Areas the second subgroup. There are separate standards and guidelines for each subgroup.

HEARTS CONTENT AND TIONESTA SCENIC AREAS

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

Protect and preserve to extent possible the natural condition of the virgin forest that now exists.

2300 RECREATION MANAGEMENT

Opportunities

Provide opportunities for a semi-primitive motorized recreation experience.

Due to Hearts Content's small size and easy access, no overnight camping, fire, or equestrian use will be permitted.

Recreation Sites

Developed facilities may be provided to enhance public use of area or protect environmental conditions.

Day use facilities at development scale 3 or below are appropriate.

Trails

*Trails will be consistent with the special area management objectives.

Trail types appropriate to the Scenic Areas are Pedestrian Summer and Winter.

Trail difficulty level should be Easy, to provide for the widest range of users.

Off-Road Vehicles (ORV)

ORV use will not be permitted.

Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Areas having unique cultural resource values of national significance will be identified for special management, including enhancement and interpretation. Cultural resource interpretation in other special management areas will be consistent with each area's purpose.

Interpretation

Except during high use periods, nonpersonal interpretative techniques should be used such as interpretive trails, bulletin boards, brochures, and maps to explain the unique natural and cultural history of the scenic areas.

During high use periods, personal contact may be used.

Visual Quality

All activities in scenic areas should meet the visual quality objective of retention.

2400 TIMBER MANAGEMENT

Timber is not managed for commercial purposes.

Silvicultural System

Some individual tree cutting may occur to ensure safety of visitors along trails, roads or in designated use areas. Extensive salvage may occur following significant insect or disease infestations or catastrophic event.

2500 WATER AND SOIL RESOURCE MANAGEMENT	Riparian areas will be managed to protect the natural condition of riparian ecosystems. Creation or enhancement of riparian-dependent resources, such as wildlife and fish habitat, is generally not appropriate.
2600 WILDLIFE MANAGEMENT	Wildlife *Protect existing spring seeps and other water areas that are critical to wintering wildlife. *Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage. Wildlife or fish habitat is not managed except that any threatened and endangered species habitat identified may be protected and enhanced. Hunting and fishing is permitted under state regulations.
2700 SPECIAL USES MANAGEMENT	*Utility Transmission Corridors *Permit only those facilities that are required to serve recreational or administrative needs. Exceptions will be considered on an individual basis. *Utility Distribution Systems *Approval of application for distribution systems crossing National Forest System lands, such as utility rights-of-way serving individual residences, will be determined individually, consistent with the standards and guidelines for this Regional management goal.
2800 MINERALS AND GEOLOGY	Federal Minerals Surface disturbing mineral development is generally not compatible with the resource objectives of this management area. This compatibility determination, however, will be based on a site specific analysis of each tract. Private Minerals Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Implemen-

tation of these measures will be negotiated with the oil/gas developers. Mitigation measures may include:

- Location of support facilities, such as tank batteries, separators, pipeyards, etc., outside the management area
- Use of techniques and equipment that can be put underground, such as downhole pumps, buried utility lines, and pipelines
- Vegetative screening of well locations and roads and noise control measures.
- Removal of brine water from the management area.

5100 FIRE MANAGEMENT

*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable State laws.

5400 LAND OWNERSHIP

*Surface Ownership

*Avoid encumbering land available for exchange with land uses that compromise land exchange opportunites.

Subsurface Ownership

Acquire subsurface rights in the Tionesta Research Natural Area. Acquire subsurface rights in the Hearts Content National Landmark.

7300 BUILDINGS AND STRUCTURES

*Buildings and structures may be provided to support resource management objectives.

7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES

*Water Supply

*Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality.

Solid Waste

*Landfill disposal sites will not be provided.

7700 TRANSPORTATION SYSTEM

Roads

*Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be closed.

Local roads will be Traffic Service Level (TSL) "D". These local roads will be closed to public traffic with the following exception:

- FR 133 E and FR 193.2 will be TSL "C" roads open to the public during the normal use season.

TIONESTA RESEARCH NATURAL AREA (TRNA) AND KANE EXPERIMENTAL FOREST (KEF)

1600 INFORMATION SERVICES	No effort to disseminate information. Specific inquiries will be responded to.
1900 LAND AND RESOURCE MANAGEMENT PLANNING	Vegetative Management Preserve the natural condition present in the Tionesta Research Natural Area. Within the KEF, vegetative management standards will be specified within each approved research project. Research projects will generally relate to forest management problems and opportunities in the northeast.
2300 RECREATION MANAGEMENT	In both the Tionesta Research Natural Area and KEF, no new recreation investments will be made. In the KEF, the existing hiking trail will be maintained. The ROS class provided will be semi-primitive motorized. Dispersed use will be allowed in the Tionesta Research Natural Area but to protect the natural conditions, no camping or fires will be permitted.
2400 TIMBER MANAGEMENT	In KEF, silvicultural systems and associated activities will be specified in each research project. In TRNA, timber harvesting will not occur unless associated with development of private mineral ownership.
2500 WATER AND SOIL RESOURCE MANAGEMENT	Riparian Area Management Riparian areas will be managed to protect the natural condition of riparian ecosystems. Creation or enhancement of riparian-dependent resources, such as wildlife and fish habitat or recreation opportunities, is generally not appropriate.

2600 WILDLIFE MANAGEMENT	In the KEF, no wildlife habitat improvements will be provided except to protect or enhance threatened and endangered species habitat. In the TRNA, there will be no wildlife habitat improvements.
2800 MINERALS AND GEOLOGY	Federal Minerals Surface disturbing mineral development is generally not compatible with the resource objectives of this management area. This compatibility determination, however, will be based on a site specific analysis of each tract. Private Minerals Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Implementation of these measures will be negotiated with the oil/gas developers. Mitigation measures may include: - Location of support facilities, such as tank batteries, separators, pipeyards, etc., outside the management area - Use of techniques and equipment that can be put underground, such as downhole pumps, buried utility lines, and pipelines - Vegetative screening of well locations and roads and noise control measures. - Removal of brine water from the management area.
4000 RESEARCH	The Northeastern Forest Experiment Station will be responsible for scientific use of the Tionesta Research Natural Area and Kane Experimental Forest.
5100 FIRE MANAGEMENT	Fire suppression will recognize the natural conditions and active research projects in the area and avoid use of heavy mechanical equipment unless the size, intensity, and/or escape of fire is critical to values of MA 8 or adjacent management areas.

5400 LAND OWNERSHIP	Subsurface Private mineral rights should be acquired as necessary to protect research values. Priority will be given to the Tionesta Research Natural Area.
7700 TRANSPORTATION SYSTEM	Local roads will be Traffic Service Level "D". These local roads will be closed to public vehicles.

Description for Management Area 9.1 (1,000)

In this management area, the land condition is dominated by vegetation progressing through a natural succession process to mature and overmature hardwood and softwood forests. Natural forces play a dominant role in site or vegetation change. Intensive oil and gas developments will be evident.

The primary purpose is to:

- Emphasize minimal management and investment in the surface resources.
- Protect the life, health, and safety of incidental forest users.
- Prevent significant loss of existing resources or productivity on the site or on adjoining land areas.

The areas managed under this goal will provide "old growth" stands of oak, sugar maple, beech, and hemlock. Naturally created openings may exist, but ecological succession will transform these into stands of tolerant hardwoods.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Jurisdiction of existing Forest Service local roads not needed for access to other areas will be transferred to the oil and gas operator.

Management or investment in recreation would be minimal. Only National Trails remain open and maintained.

Activities

The following are types of activities which may occur within the management area: dispersed recreation including hiking, camping, hunting, trapping, photography, bird-watching, and nature study; private oil, gas, and mineral exploration and development activities; possible salvage of diseased or damaged timber.

TABLE 4-29 Output Objectives for Management Area 9.1

Output by Management Problem	Unit of Measure	Average Annual Planned Decade 1 D (D2)	Amount Projected Decade 2 D (D2)
Dispersed Recreation Opportunities			
Roaded Natural	M RVD	1 (1)	1 (1)
Wildlife			
Big-Game Hunting	M WFUD	.2 (.2)	.2 (.2)
Small-Game Hunting	M WFUD	.1 (.1)	.1 (.1)
Non-Game	M WFUD	.1 (.1)	.1 (.1)
Fishing	M WFUD	.3 (.2)	.3 (.2)

TABLE 4-30 Practices for Management Area 9.1[1]

Management Practice	Unit of Measure	Average Annual Planned Decade 1 D (D2)	Amount Projected Decade 2 D (D2)
NOT APPLICABLE			

1 No management practices will be scheduled for this area. Only activities necessary to protect resources or incidental users will be carried out as needed. Read standards and guidelines for more information.

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 9.1
(An asterisk designates standards taken from the Eastern Regional Guide.)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Permit timber salvage only for fire hazard reduction, pest management, and prevention of significant resource loss.

*Make no investments in vegetation management, unless needed to protect adjoining lands from pests or fire or to protect the resources and existing investments.

2100 ENVIRONMENTAL MANAGEMENT

Pesticide Use

Use of pesticides is suitable for controlling insects and disease only to prevent significant resource loss or if adjacent private lands are endangered.

2300 RECREATION MANAGEMENT

Opportunities

*Accept the existing classes of recreational opportunities without further investment.

Recreation Sites

There will be no recreation sites in this management area.

Trails

*Investments in existing trails needed to connect segments of a continuous or extensive trail system, other than national scenic trails, will be made only for user safety and resource protection.

Only national trails will remain open. These national trails may provide pedestrian summer and winter use.

Trails may include two difficulty classes of More and Most Difficult.

*Cultural Resources

*On-site cultural resource interpretation will not occur in this prescription area.

*Conduct evaluations of cultural resources, as needed, to determine if protective measures are justified. Protective measures will be limited to those necessary to prevent loss of significant value.

Interpretation

There will be no interpretation carried out in this management area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
A (Distinctive)	R	PR	PR	PR	M	M	M
B (Common)	PR	M	M	PR	M	MM	MM
C (Minimal)	PR	M	M	M	MM	MM	MM

Visual Quality Objectives -(R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

No investments will be made to mitigate the visual impacts of natural-caused changes.

2400 TIMBER MANAGEMENT

Timber is not managed for commercial uses. Salvage may be considered if fire or insect and disease epidemics threaten adjacent productive land. Timber products cut by the mineral developer will be paid for and removed.

	Firewood The only fuelwood available is that removed from the area by the timber purchaser during salvage sale operations. Pulpwood In salvage operations, mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed.
2500 WATER AND SOIL RESOURCE MANAGEMENT	Watershed improvement projects will be limited to those necessary to maintain environmental values and to protect public health and safety.
2600 HABITAT MANAGEMENT	Wildlife Provide for habitat management only to protect public safety and threatened and endangered species.
2700 SPECIAL USES MANAGEMENT	*Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way. *Utility Distribution Systems *Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.
5100 FIRE MANAGEMENT	Wildfire detection and suppression will be commensurate with the resource value to be protected. Detection and suppression will be planned, based on an analysis of probable fire locations, expected fire intensities, potential net resource value change, and potential threat to health, safety, and adjacent properties.

5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Provide buildings and structures only as needed to protect health and safety.
7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	Water Supply *Drinking water sources will not be developed. Effluents No sewage system will be provided. *Solid Waste *Emphasize and promote use of the carry-in/carry-out method of disposal. *Use of National Forest System lands for landfill disposal sites should be considered only as a part of an area-wide system.
7700 TRANSPORTATION SYSTEM	Roads *Arterial roads, at a minimum, will be designed and constructed for transporting forest products, accommodating planned motorized recreation use, will be open, and will be maintained to maintenance level III or higher. *Provide roads only as needed for access to adjacent areas or to protect resources. *Roads may be closed to public use or restricted by vehicle type or season of use. *Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

*All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time.

*Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be obliterated.

State, township, and Forest Service administered arterial and collector roads may be located within this management area.

Local roads not needed for access to other management areas and needed to develop oil and gas may have their jurisdiction transferred to the oil and gas operator.

Local Roads that lie completely within this area will be closed and revegetated.

Local roads that pass through this area and provide access to other management areas will be designed and maintained to the standard for the management area served.

D. OTHER FOREST SUMMARIES

Forest-wide summaries of particular management practices, output, or costs are displayed in Appendix C. These serve to meet requirements of the National Forest Management Act and regulations as well as provide a clearer understanding of forest-wide programs.

Appendix C contains:

Table C- 1 Forest-wide Summary of Management Practices and Total Cost
Table C- 2 Allowable Sale Quantity and Long-Term Sustained Yield Capacity
Table C- 3 Timber Resource Land Suitability
Table C- 4 Allowable Sale Quantity, Timber Sale Program Quantity, and Vegetation Management Practices
Table C- 5 Present and Future Forest Conditions
Table C- 6 Rotation Ages of Existing Stands Assigned Management Prescriptions 3 and 6.2
Table C- 7 Timber Productivity Classification for Forest Land
Table C- 8 Forest-wide Summary of Recreation Investments for the First Decade
Table C- 9 Timber Sale Schedule for 1986, 1987, and 1988
Table C-10 Annual Timber Implementation Summary for Decade 1 (1986-1995)
Table C-11 Summary of Other Benefits for Scheduled Timber Sales.

CHAPTER 5

Implementation, Monitoring, and Evaluation

CHAPTER 5

IMPLEMENTATION, MONITORING, AND EVALUATION

The direction in this chapter is contained in three sections:

- Implementation Direction
- Monitoring and Evaluation Program
- Amendments and Revisions

Collectively, these sections explain how management direction will be implemented, how Forest Plan implementation will be monitored and evaluated, and how the Forest Plan will be kept current in light of changing conditions and assumptions.

Both the structure and the titles in the Monitoring and Evaluation Program subsection reflect all the provisions of the NFMA Regulations.

A. IMPLEMENTATION DIRECTION

Implementation Process

Implementation is the process used to achieve, on the ground, the future desired conditions and management direction described in each management area. An integrated resource management approach will be used to assure interdisciplinary teamwork and public involvement throughout the process. The major steps of this approach are:

1. Selecting land areas that best provide opportunities for accomplishing the Forest Plan management direction.

2. Analyzing the situation and identifying multi-resource projects that assure an integrated approach to achieving the desired future condition.

3. Prioritizing, scheduling, and budgeting the multi-resource projects that best meet the Forest Plan management direction.

4. Designing the projects to accommodate the integrated needs for all resources and values.

5. Completing the multi-resource projects as designed.

6. Protecting and managing the resources and providing public health and safety.

A detailed description of the Integrated Resource Management (IRM) approach is included in the USDA Forest Service Eastern Region publication, "Working Together for Multiple Use - IRM."

Implementation Schedule

An implementation schedule for all resource projects and activities will be developed and maintained. (See Appendix C for a partial listing). The Forest Supervisor is responsible for maintaining the schedule. The public will be notified, annually, of changes.

Consistency of Other Management Instruments

Subject to valid existing rights, all outstanding and future permits, contracts, cooperative agreements, and other instruments for occupancy and use of affected lands will be consistent with the Forest Plan by September 30, 1990. Existing plans will be superseded or brought into compliance within two years after Forest Plan approval.

Budget Proposals

The Forest Plan provides the basis for developing multi-year program budget proposals and the annual program of work. Actual funding levels will determine the rate of implementation of the Forest Plan.

Environmental Analysis

Future environmental analyses will be tiered to the Forest Plan and EIS.

Projects and management practices permitted within the Forest Plan will be subjected to environmental analysis as they are planned for implementation. USDA Forest Service Environmental Policy and Procedures are described in FSM 1950 and FSH 1909.15. If the environmental analysis for a project shows that: (1) the management area prescription and standards and guidelines can be complied with and (2) little or no environmental effects are expected beyond those identified and documented in the Forest Plan Final EIS; the analysis could be tiered to this Final EIS and a Decision Notice used to document the decision. In such situations, the analysis will not be documented in the form of an environmental assessment or environmental impact statement, rather an analysis or project file would be made available to the public for review.

B. MONITORING AND EVALUATION PROGRAM

This subsection describes how monitoring and evaluation requirements will be met. The purpose of monitoring and evaluation is to determine progress in meeting Forest Plan direction. Monitoring and evaluation are separate, sequential activities. They provide information to determine whether Forest Service programs are meeting the Forest Land and Resource Management Plan direction. This direction includes goals and objectives, management prescriptions, and standards and guidelines. It is through this process that the quality of implementation is assessed. Also, any needed change in Forest Plan Management direction is determined through this process.

MONITORING

Monitoring is done to observe or record the results of actions. This consists of collecting information from selected sources, usually on a sample basis. Information is used to determine:

- if Forest Plan goals and objectives are being achieved,
- if management prescriptions are applied as directed,
- if the results of applying prescriptions address the management problems, issues, concerns, and opportunities,
- if significant effects are occurring as predicted,
- if costs of implementing the Plan are as predicted.

A table displaying the required items to be monitored and their respective standards of measurement is included within the Monitoring Plan located in Appendix B.

Requirements

There are two considerations that determine monitoring requirements. They are: (1) Monitoring needs required by NFMA and (2) Considerations found to be significant and linked to the resolution of public issues, management concerns, and resource development opportunities and corresponding environmental effects.

1) NFMA Regulations - The following NFMA required items will be monitored. (Ref. to 219.12(k)(i-iv), 219.7(f), 219.19, 219.28).

a) Compare outputs with objectives
b) Verify unit costs with estimated costs
c) Document prescriptions and effects
d) Determine significant changes in productivity
e) Determine if lands are adequately restocked
f) Evaluate unsuitable lands
g) Determine if harvest area size limits should be continued
h) Assure insect/disease do not increase to damaging level
i) Determine population trends of indicator species
j) Evaluate effects of Allegheny National Forest management on adjacent private land or other public land as well as the effects management on these adjacent lands has on the Allegheny National Forest.
k) Identify research needs to support or improve National Forest management

2) Forest Management Problems

Items specifically related to the Forest Management Problems will be monitored to determine how well management is addressing the significant public issues, management concerns, development opportunities and corresponding environmental effects. To assist in evaluating environmental effects, refer to the EIS, Chapter 4, Environmental Consequences which describes: a) practices needed to address each problem, b) kinds of effects caused by the practices, and c) specific effects that would occur in response to the problem.

Standards of Measurement

Monitoring standards of measurement will be established for each item to be monitored. They include:

1) What is to be measured - activity, practices, outputs, effects
2) Unit of measure
3) Frequency of measure
4) Expected precision
5) Expected reliability
6) Technique or method

The frequency, precision, and reliability of sampling is based on the relative importance and identified needs. A variety of data collection techniques will be used. These techniques include:

- site specific observations by specialists,
- field assistance trips,
- general field observations,
- management attainment reporting system,
- formal management reviews on a scheduled basis,
- and discussions with other agencies and general public users.

The specific monitoring action program will be included as part of the Forest annual program of work. This annual program includes the details on the schedule of monitoring actions, specific locations, costs, and responsibilities.

EVALUATION

Evaluation determines how well actual results are meeting Forest Plan direction. Information obtained through monitoring is analyzed with respect to the Forest Plan implementation.

Requirements

A review and evaluation of monitoring results will be conducted by the Forest Supervisor on an annual basis. The review and evaluation will focus on the monitoring requirements using input from the various monitoring techniques.

Results and Recommendations

Based on the results of the evaluation, the Forest Interdisciplinary Team will make recommendations to the Forest Supervisor on proposed amendments, revisions, or changes in management direction to the Forest Plan. The evaluation results and recommendations will usually be within the following categories:

EVALUATION RESULTS AND RECOMMENDATIONS

	Evaluation Results	Recommendation
1)	Management Problems, ICO's are being resolved.	No Action.
2)	Practices or standards/guidelines are applied in an unacceptable manner.	Revise management direction or provide training.
3)	An allocation, practice, standard/ guideline is not responsive to a management problem or ICO's or it creates unacceptable, adverse effects, but does not cause a major change in Plan intent.	Amend Plans and/or Standards & Guidelines.
4)	Unit costs are too low to maintain quantity and quality of output.	Amend unit costs. Program funds to accomplish backlog that will accumulate during adjustment.
5)	Budget insufficient to implement Plan, but future outlook favorable; schedule affected by natural catastrophe or not compatible with land suitability but can still be adjusted to approximate planned objectives.	Amend schedule of projects. Program future funds to accomplish backlog that will accumulate during adjustment.
6)	New information seriously affects assumptions; ICO's not being resolved; emerging ICO identified; an allocation of land, a practice, or standards or guidelines do not resolve ICO and seriously affect multiple resources or management prescriptions; schedule of projects cannot be adjusted during Plan period to meet Plan objectives due to natural catastrophy or land suitability problems. Significant change in demand for goods, services, and uses causes adjustments in schedules or management direction.	Consider significant Amendment of Plan. Recommend to Regional Forester.
7)	Evaluation inconclusive.	Initiate more data collection or research.

Annual Evaluation Report

The Forest Supervisor's decisions resulting from monitoring, review, and analysis will be documented in an Annual Evaluation Report and maintained for future use in amending or revising the Forest Plan.

During revision of the Forest Plan, normally from ten to fifteen years after the plan is final, an overall evaluation of the annual reports will be used as one measure to analyze the management situation and identify a need to change. This anaysis will be submitted to the Regional Forester for review prior to revision of this plan. This same procedure will be used for significant amendments to the plan that may require the filing of an Environmental Impact Statement.

C. AMENDMENTS AND REVISION

The following Federal regulations provide information about the conditions that could lead to amendments and revisions.

36 CFR 219.10 (e) - Plan Implementation. As soon as practicable after approval of the plan, the Forest Supervisor shall ensure that, subject to valid existing rights, all outstanding and future permits, contracts, cooperative agreements, and other instruments for occupancy and use of affected lands are consistent with the plan. Subsequent administrative activities affecting such lands, including budget proposals, shall be based on the plan. The Forest Supervisor may change proposed implementation schedules to reflect differences between proposed annual budgets and appropriated funds. Such scheduled changes shall be considered an amendment to the forest plan, but shall not be considered a significant amendment, or require the preparation of an environmental impact statement, unless the changes significantly alter the long-term relationship between levels of multiple-use goods and services projected under planned budget proposals as compared to those projected under actual appropriations.

36 CFR 219.10 (f) - Amendment. The Forest Supervisor may amend the forest plan. Based on an analysis of the objectives, guidelines, and other contents of the forest plan, the Forest Supervisor shall determine whether a proposed amendment would result in a significant change in the plan. If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor shall follow the same procedure as that required for development and approval of a forest plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.

36 CFR 219.10 (g) - Revision. A forest plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly or when changes in RPA policies, goals, or objectives would have a

significant effect on forest level programs. In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the forest plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a forest plan. The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly.

An annual summary of Forest Plan amendments will be prepared and incorporated into the Plan as additions and made available to interested parties. This is to insure that the Plan will remain current, as is intended by the monitoring and evaluation, amendment, and revision provisions of the Regulations. September 30 is the annual target date for the completion of these Forest Plan Amendment summaries.

This Forest Plan will be revised when necessary but no later than 15 years from the date the plan legally goes into effect.

APPENDIX A

Glossary

APPENDIX A

GLOSSARY

Activity Fuels: Fuels that have been directly generated or altered by management action.

Allegheny Hardwoods: Forest type containing Black Cherry, Red Maple, Yellow Poplar, White Ash, and Sugar Maple.

Analysis Area: The smallest unit of land recognized in the analysis process or in the FORPLAN model. Each acre of a given analysis area has similar productivity, response to treatment, and cost of treatment. Analysis areas divide the Forest into units which help us analyze the planning problems.

Analysis of Management Situation (AMS): A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

Aquatic: Pertaining to standing and running water in streams, rivers, lakes and reservoirs.

Allowable Sale Quantity: The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan during a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.

Arterial Roads: These roads provide service to large land areas and usually connect with public highways or other forest arterial roads to form an integrated network of primary travel routes. Their location and standard are often determined by a demand for maximum mobility and travel efficiency, rather than specific resource management service. They are usually developed and operated for long-term land and resource management purposes and constant service.

B/C Values: See "Benefit/Cost Ratio."

Background (Visual Distance Zone): The distance part of a landscape; surroundings, especially those behind something, providing harmony and contrast; area located from two miles to infinity from the viewer.

Basal Area: Measurement of how much of a site is occupied by trees. It is determined by estimating the DBH of all the trees in the area; that is, to estimate the total cross-section area of all the trees at breast height (4.5 feet above the ground).

Base Sale Schedule: A schedule in which the planned sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceeding decade of the planning period and this planned sale and harvest for any decade is not larger than the long-term sustained-yield capacity. (This definition expresses the principle of non-declining flow.)

Benchmark: A set of estimates used to establish standards by which to compare alternatives in detail. Benchmark alternatives include minimum level, maximum resource levels and maximum present net value levels.

Benefit/Cost Ratio: The total discounted benefits of any activity divided by the total discounted cost.

Best Management Practices (BMPs): Standards and guidelines which reduce nonpoint source pollution.

Big Game: The species of large animals that are hunted, such as deer.

Biological Potential: The maximum production of a selected organism that can be obtained under optimum management.

Board Foot: An amount of wood equivalent to a piece 12" by 12" by 1".

Buffer Filter Strip: A designated land or water area, along the perimeter of some land use, where use is regulated so as to restrict, absorb, or otherwise preclude or control unwanted development or other intrusions into areas beyond the buffer.

Burning Prescription: Written direction stipulating fire environment conditions, techniques and administrative constraints necessary to achieve specific resource management objectives by use of fire on a given area of land.

CAPs or CAP: Cherry, Ash and Poplar (See DEIS, Appendix III,C. for more information).

CEQ: Council of Environmental Quality.

CFR: Code of Federal Regulations.

CMAI: See "Culmination of Mean Annual Increment."

Canopy: The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth.

Carrying Capacity	The maximum number of animals that a habitat can sustain while maintaining the ecosystem in a healthy, vigorous condition.
Character Type:	A landscape term used to classify land by its distinguishing visual characteristics such as land form, rock formations, water forms, and vegetative patterns.
Clearcutting:	A regeneration method used to establish even-age stands whereby all trees are removed in one harvest. For a detailed description of clearcutting, see the environmental consequences section of Chapter 4 of the EIS, page .
Collector Road:	Serves smaller land areas than a Forest arterial road and is usually connected to a Forest arterial road or public highway. Collects traffic from Forest local roads and/or terminal facilities. The location and standard are influenced by long-term multi-resource service needs as well as travel efficiency. May be operated by either constant or intermediate service, depending on land use and resource management objectives for the area served by the facility.
Commercial Forest Land:	Forest land that is producing or is capable of producing crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary, or the Chief; (2) existing technology and knowledge is available to ensure timber production without irreversible damage to soils, productivity, or water conditions; and (3) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within five years after final harvesting.
Common (Variety Class B):	Refers to prevalent, usual, or widespread landscape variety within a character type. It also refers to ordinary or undistinguished visual variety.
Concession Permit:	A permit which authorizes private individuals or corporations to operate Forest Service-owned facilities as a commerical profit-making venture.
Conifer:	Any of predominantly evergreen, cone-bearing trees, such as pine, spruce, hemlock, or fir.
Constraint:	A qualification of the minimum or maximum amount of an output or cost that could be produced or incurred in a given time period.

Cord:	A unit of gross volume measurement for stacking round or split wood. A standard cord is 4' by 4' by 8' or 128 cubic feet. A standard cord may contain 60-100 cubic feet of solid wood depending on the size of the pieces and the compactness of the stacks.
Corridor:	A linear strip of land identified for present or future location of transportation or utilities rights-of-way within its boundaries.
Cost Coefficients:	Values which relate an acre of land to a particular dollar cost in a specific period of time.
Cost Efficiency:	The usefulness of specified inputs (cost) to produce specified outputs (benefits). In measuring cost efficiency, some outputs (such as environmental, economic, or social impacts) are not assigned monetary values but are achieved at specified levels in a least cost manner.
Cubic Foot:	Common unit of measure for wood volume equivalent to a 12 inch cube.
Culmination of Mean Annual	Increment (CMAI): The age at which the average annual growth is greatest for a stand of trees. Mean annual increment is expressed in cubic feet and is based on expected growth according to the management intensities and utilization standards assumed in accordance with 36 CFR 219.16(a)(2)(i) and (ii). The culmination of mean annual increment calculation includes yields from the regeneration harvest, as well as yields from any planned intermediate harvests. The utilization standards in the 2400 section of the Forestwide Standards and Guidelines apply.
Cultural Resource:	The physical remains of human cultural systems in places or sites of importance in human history or prehisotry.
DBH:	Diameter at Breast Height (4.5 feet).
Demand Trends:	The expected future need or desire for outputs, services, and uses.
Departure:	A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future. A departure can be characterized as a temporary increase, usually in the beginning decade(s) of the planning period, over the base sale schedule that would otherwise be established, without impairing the future attainment of the Forest's long-term sustained yield capacity.

Design Criteria — Those requirements (such as resource management objectives, road management objectives, safety requirements, and traffic characteristics) that govern selection of elements and standards for a road or section of road.

Design Standards — The definitive lengths, widths, and depths of individual elements (such as 14-foot traveled way, 2-foot shoulders, 3/4:1 cut slops, 3-foot curve widening, and 6 inches of crushed aggregate).

Developed Recreation: — Recreation requiring facilities that result in concentrated use of an area. Examples are campgrounds and picnic areas. Facilities might include roads, parking lots, picnic tables, toilets, drinking water, and toilet buildings.

Development Scale: — The various levels of site modification or kinds of facilities permitted at a recreation site. Five levels are described:

Level I - Minimum Site Modification: Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. No motorized access.

Level 2 - Little Site Modification: Rustic or rudimentary improvements designed primarily for protection of the site rather than comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal, almost subliminal.

Level 3 - Site Modification Moderate: Facilities about equal for protection of site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal, but generally direct.

Level 4 - Site Heavily Modified: Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density three to five family units per acre. Plant materials usually native. Interpretive service often formal or structured.

Level 5 - High Degree of Site Modification: Facilities mostly designed for comfort and convenience of users. Usually includes flush toilets; may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually available. Designs formalized; architecture may be contemporary. Mowed lawns and clipped shrubs not unusual.

Dispersed Recreation: In contrast to developed recreation sites such as campgrounds, picnic grounds, resorts, and recreation residences, dispersed recreation areas are the lands and waters under Forest Service jurisdiction which are not developed for intensive recreation use. Dispersed areas include general undeveloped areas, roads, trails, and water areas not treated as developed sites.

Distance Zones: Areas of landscapes denoted by specified distances from the observer. Used as a frame of reference in which to describe landscape characteristics or human activites and described as foreground (fg), middleground (mg), or background (bg).

Distinctive (Variety Class A): Refers to unusual and/or outstanding landscape varieties that stand out from the common features in the character type.

Distribution System: Transmission lines, pipelines, utility lines and the like.

Diversity: The relative degree of abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area. The degree of diversity is measured relative to those levels of abundance which would be expected to occur under natural stand conditions.

EA: Environmental Assessment.

Ecological Land Type (ELT): An area of land with a distinct combination of natural, physical, chemical, and biological properties that cause it to respond in a predictable and relatively uniform manner to the application of given management practices. In a relatively undisturbed state and/or at a given stage (sere) of plant succession, an ELT is usually occupied by a predictable and relatively uniform plant community. Typical size generally ranges from about ten to a few hundred acres.

Ecosystem: The system formed by the interaction of groups of organisms and their environment.

Endangered Species (E): Species listed as nationally in danger of extinction throughout all or a significant portion of their ranges by current Federal Register Final Rule-making.

Endemic: *Native or confined to a certain region; having comparatively* restricted distribution.

Environmental Analysis: The process associated with the preparation of an environmental assessment or environmental impact statement and the decision whether to prepare an environmental impact statement. It is an analysis of alternative actions and their predictable short-term and long-term environmental effects which include physical, biological, economic, and social factors and their interactions.

Environmental Assessment: A concise public document that serves to (1) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a "finding of no significant impact," and (2) aid in agency's compliance with the NEPA when no environmental impact statement is necessary (40 CFR 1508.9a).

Environmental Effect: Net change (good or bad) in the physical, biological, social or economic components of the environment resulting from human actions. Effects and impacts, as used in this EIS, are synonymous.

Environmental Impact Statement (EIS): A statement of environmental effects required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for comment and review. It is a formal document which must follow the requirements of NEPA, the Council on Environmental Quality (CEQ) guidelines, and directives of the agency responsible for the project proposal.

Erosion: The wearing away of the land's surface by running water, wind, ice, and other geological agents. It includes detachment and movement of soil or rock fragments by water, wind, ice or gravity.

Even-aged Silvicultural System: The combination of actions that result in the creation of stands in which trees of essentially the same age grow together. A stand is considered even-aged if the difference in age between the oldest and youngest trees of the managed stand does not exceed 20 percent of the length of the rotation.

Even-flow: Continuous supply of products over a given time period.

Existing Visual Conditions (EVC): The present state of visual alteration which is measured in six degrees (untouched, unnoticed, minor disturbance, disturbed, major disturbance, drastic disturbance) of deviation from the natural appearing landscape.

FSM: Forest Service Manual.

Fauna: The animals of a given region or period.

Filter Strip: A designated area along streams where the sediment filtering ability of the forest floor is maintained.

Financial Maturity: Term generally used to refer to a specific timber rotation age where the total present net value of the analysis area or timber stand reaches the maximum.

Fire Management: All activities required for the protection of resources and values from fire, and the use of fire to meet land management goals and objectives.

Fire Management Area: One or more parcels of land with clearly defined boundaries and with established fire management direction which is responsive to land and resource management goals and objectives.

Fire Management/Effectiveness Index (FMEI): The index value measures effectiveness of annual fire management operations programs. It is a planning, attainment, analysis, and evaluation tool for both annual and long-term programs. Measured in dollars per thousand acres protected, the objective is to minimize the index value.

Floodplain: Low land and relatively flat areas joining inland and coastal waters, including debris cones and flood prone areas of off-shore islands. The minimum area included is that subject to a one percent (100-year recurrence) or greater chance of flooding in any given year.

Flora: The plants of a given region or period.

Forage: All nonwoody plants (grass, grass-like plants and forbs) and portions of woody plants (browse) available to domestic livestock and wildlife for food. Only a portion of a plant is available for forage if the plant is to remain healthy.

Foreground (Visual Distance Zone): That part of a scene, landscape, etc., which is nearest to the viewer and in which detail is evident, usually up to one-quarter mile from the viewer.

Forest Highway (Legal Definition): A Forest road under the jurisdiction of and maintained by a public authority and open to public travel. (Title 23 USC 101 as amended by the Surface Transportation Act of 1978.)

Forest Land: Land at least ten percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use.

Forest Land - Not Appropriate: Lands not selected for timber production in the Forest plan alternative due to (a) the multiple-use objectives for the alternative precluded timber production; (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met; and (3) the lands are not cost-efficient, over the planning horizon, in meeting Forest objectives that include timber production. Lands not appropriate for timber production shall be designated as unsuitable in the preferred alternative and Forest plan.

Forest Land - Not Suited: Forest land that is not managed for timber production because (1) the land has been withdrawn by Congress, the Secretary, or the Chief; (2) the land is not producing or capable of producing crops of industrial wood; (3) technology is not available to prevent irreversible damage to soils, productivity, or watershed conditions; (4) there is no reasonable assurance that lands can be adequately restocked within five years after final harvest, based on existing technology and knowledge, as reflected in current research and experience; (5) there is, at present,

a lack of adequate information to respond to timber management activities; or (6) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in Forest plans.

Forest Land - Suited: Land that is to be managed for timber production on a regulated basis.

Forest Land - Tentatively Suited: Forest land that is producing or is capable of producing crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary, or the Chief; (2) existing technology and knowledge is available to ensure timber production without irreversible damage to soils, productivity, or watershed conditions; (3) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within five years after final harvest; and (4) adequate information is available to project responses to timber management activities.

Forest Plan: A long-range plan for managment of a designated area of National Forest System lands. This plan will provide management direction for all management programs and practices, resource uses, and resource protection measures on these lands.

Forest-wide Standards and Guidelines: A set of statements which define or indicate acceptable norms, specifications, or quality that must be met when accomplishing an activity or practice under a given set of conditions on the Forest.

Forest Type: A descriptive term used to group stands of similar character, species composition, and other ecological factors.

FORPLAN: A specific linear program model designed for use in Forest Service planning.

Fuel Break: A strategically located strip, normally 100-400 feet wide, where fuel has been reduced or modified; used as a safe location from which firefighters can attack and control a fire.

Fuel Management: The practice of planning and executing treatment or control of any vegetative material which adversely affects meeting fire management direction based upon resource management goals and objectives.

Fuel Treatment:	A rearrangement or disposal of natural or activity fuels to reduce the fire hazard. Fuels are defined as those vegetative materials (living or dead) consumable by fire.
Fuels:	Wildland vegetation which can burn. While usually referring to above-ground living and dead wildland surface vegetation; roots and organic soils, such as peat, are often included.
Game Species:	Wild animals hunted for sport or food.
Goods and Services:	The various outputs, including on-site uses, produced by forest and rangeland resources.
Group Selection Cutting:	A cutting method used in uneven-aged management. It involves the removal of small groups of trees to meet a predetermined goal of size, distribution, and species in the remaining stands.
Growing Stock Level:	Expressed in either stems per acre or square feet of basal area of timber growing on any area.
Guideline:	An indication or outline of policy or conduct.
Habitat:	The place where animals live (i.e., water for beaver, fish and aquatic insects; rocks for bats and some bird species; or forested areas for many mammals, birds and reptiles).
Hardwood:	A broad-leaved flowering tree, as distinguished from a conifer. Trees belonging to the botanical group of angiospermae.
Harvest (Timber Harvest):	Cutting and removal of trees from the forest for utilization.
Herbicide:	A chemical compound used to kill or control growth of undesirable plant species.
High Quality Hardwoods:	Hardwood trees or stands that will yield high-value timber products such as face veneer, knot-free lumber, furniture or specialty product stock, and flooring.
IOC:	Abbreviation for the term "Issues, Opportunities and Concerns."
Implementing Regulations:	Regulations generated by an agency to implement an Act of Congress; i.e., 36 CFR 219 contains implementing regulations for RPA and NFMA.

Indicator Species: A species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Their population changes are believed to indicate effects of management activities on a number of other species or water quality.

Indigenous Species: Species historically native to an area; not introduced by humans.

Informed Public Consent: Attaining substantial effective agreement on a course of action through various public information and involvement projects.

Insecticide: An agent used to control insect populations.

Intangible Values (Intangible Outputs): Goods, services, uses and conditions which are believed to have values to the society but which have neither market values nor assigned values.

Integrated Pest Management: The comprehensive systems approach to achieving economical pest control in an environmentally acceptable manner. The individual components of integrated pest management in forestry include cultural, mechanical, manual, prescribed fire, biological, chemical, and regulatory means.

Interdisciplinary Team (ID): A group of individuals with skills from different resources. An interdisciplinary team is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and problems. Team member interaction provides necessary insight to all stages of the process.

Intermediate Harvest: Any removal of trees from an even-aged stand between the time of its formation and the regeneration cutting.

Intermittent Stream: A stream that only flows during periods of the year when it receives flow from intermittent groundwater sources or surface water, such as rain or snowmelt.

Interpretive Sites: A developed site at which a broad range of natural or cultural history is interpreted or described for the enjoyment of the public.

Intolerant Species: Those plant species that do not grow well in shade.

Issue: A subject or question of widespread public discussion or interest regarding management of National Forest System lands.

K-V Funds: In 1930, Congress passed the Knutson-Vandenberg Act (K-V Act) to authorize collection of funds for reforestation and timber stand improvement work on areas cut over by a timber sale.

Land Adjustment: Changing National Forest System landownership through acquisition, exchange or disposal of land or interests in land.

Land Allocation: The commitment of a given area of land and its resources to the compatible combination of goods, services and uses specified by a management prescription.

Land Condition: The state of a given area in terms of the quality of its physical and biological character and use. Land conditions can be existing, future or desired.

Land Management: An intentional process of planning, organizing, programming, coordinating, directing, and controlling land use actions.

Land Type Group: Broad groupings of land forms (moderate slope, plateau, steep slope, and bottom) with differences in management costs and resource production potential.

Land Use: The occupation or reservation of land or water area for any human activity or any defined purposes; in this EIS, the terms "use" and "land use" are interchangeable.

Landline: Property boundaries located on the National Forest.

Leasable Minerals: Coal, phosphate, sodium, potassium, oil, oil shale, native asphalt, solid and semi-solid bitumen, bituminous rock, sulfur and gas.

Legal Administrative Status: Identifies specific legal or administrative requirements which may restrict management options on an area.

Linear Program Model: A mathematical method used to determine the best use of resources to achieve a desired result and limitations on available resources that can be expressed in the form of equations.

Linear Programming: A mathematical technique for determining the effects of alternative resource allocations.

Litter: The uppermost layer of organic debris on the ground under a vegetation cover; i.e., essentially the freshly-fallen or only slightly-decomposed vegetable material, mainly from foliage, but also bark fragments, twigs, flowers, fruits, etc.

Local Road: Connect terminal facilities with Forest collector and arterial roads, or public highways. Their location and standard are usually controlled by a specific resource activity rather than travel efficiency. Forest local roads may be developed and operated for either long-term or short-term service.

Long-term: Action governed by the Forest Plan generally taking place over a period longer than ten years from the present.

Long-term Sustained Yield Capacity (LTSYC): The highest uniform wood yield from lands being managed for timber production that may be sustained, under a specified management intensity, consistent with multiple-use objectives.

M: 1,000 units.

MBF: One thousand board feet of timber.

MIH Codes: Management Information Handbook codes.

MM: 1,000,000 units.

MMBF: One million board feet of timber.

Maintenance Level: A formally-established criterion which prescribes the intensity of maintenance necessary for the planned use of a road.

Maintenance Level 1: This level is basic custodial care as required to protect the road investment and to see that damage to adjacent lands and resources is held to a minimum. Level 1 maintenance often requires an annual inspection to determine work needed, if any, to keep drainage functional and the road stable. This level is the normal prescription for roads that are not open to traffic. Level 1 is to maintain drainage facilities and runoff patterns.

Maintenance Level 2: This level is used on roads where management requires that the road be open for limited passage of traffic. Traffic is normally minor, usually consisting of one or a combination of administrative uses, permittee use, or other specialized traffic.

Maintenance Level 3: This level is used on roads which are open to public traffic and generally applies when use does not exceed 15 vehicles average daily traffic (ADT). ADT should be used as a guide in determining the maintenance level but not as the sole criterion. A road may be used by only one or two vehicles a day for most of the year; however, during a brief period, such as hunting season, the road use may increase to 20 or 30 vehicles a day. Total traffic types and planned land use are important criteria for selecting a maintenance level. The road is maintained for safe and moderately convenient travel, suitable for passenger cars.

Maintenance Level 4: This level generally applies when use of a road is between 15 and 100 vehicles ADT (see comment concerning ADT under Maintenance Level 3). At this level, more consideration is given to the comfort of the user. These roads are frequently surfaced with aggregate material, but some routes may be paved to meet economical considerations of the limited aggregate resource and surface replacement cost factors.

Maintenance Level 5: This level is generally maintained for use of 100 or greater vehicles ADT (see comment concerning ADT under Maintenance Level 3). Roads in this category include both paved and aggregate surfaces. Safety and comfort are important considerations. Abrupt changes in maintenance will be posted to warn a traveler until these deficiencies are corrected.

Management Area: A land area that has common management direction to achieve a common goal. The entire Forest is divided into management areas. All are described, and policies and prescriptions relating to their use are listed.

Management Concern: A matter of importance to the management of National Forest System lands which is identified by sources within the agency.

Management Direction: A statement of multiple use and other goals and objectives, the management prescriptions, and the associated standards and guidelines for governing them.

Management Indicator Species: See "Indicator Species."

Management Intensity: The management practice or combination of management practices and their associated costs designed to obtain different levels of goods and services.

Management Opportunity: A statement of general actions, measures, or treatments that address the public issues or management concern in a favorable way.

Management Practice: A specific action, measure or treatment.

Management Prescription: Management practices selected and scheduled for application in a specific area to attain multiple-use and other goals and objectives. At the Forest level for a management area, a management prescription includes the management practices selected and scheduled, the description of the desired future condition of the land, and the standards and guidelines necessary to control the management practices and achieve and maintain the desired future conditions.

Management Team: Decision-making group consisting of the Forest Supervisor, Staff officers, and District Rangers.

Marginal Analysis: A type of analysis in which the only costs and benefits considered are those about which decisions can be made. Fixed benefits and costs are not considered.

Market Value (Market Output): Goods, services, and uses which are commonly bought and sold and which are priced or valued directly from existing markets.

Maximum Modification (MM): A visual quality objective meaning human activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background area.

Middleground (Visual Distance Zone): That part of a scene or landscape which extends from the foreground zone to 1/2 to 2 miles from the observer. Texture is discernible at that distance.

Mineral Development: To open up a mineralized seam, ore body, or deposit for production.

Mineral Exploration: A search for mineral materials.

Mineral Materials: Common varieties of bedrock, sand, gravel, and similar material.

Minimal (Variety Class B): Refers to little or no visual variety in the landscape. Monotonous or below average compared to the common features in the character type.

Minimal Level Management: The management strategy that would meet only the basic statutory requirements of administering unavoidable non-discretionary land uses, preventing damage to adjoining lands of other ownerships, and protecting the life, health, and safety of incidental users.

Modification (M): A visual quality objective meaning human activity may dominate the characteristic landscape but must, at the same time, utilize naturally-established form, line, color and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

Motorized Use: Land uses requiring or largely dependent on motor vehicles and roads.

Multiple Use: The management of all the various renewable surface resources of the National Forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land would be used for less than all of the resources; in a harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

NEPA: National Environmental Policy Act.

NFMA: National Forest Management Act.

National Register of Historic Places: A listing maintained by the National Park Service of areas which have been designated as being of historical significance.

Natural: Existing and/or formed by nature. Not artificial.

Net Public Benefits: The overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative costs (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria, rather than by a single measure or index. The maximization of net public benefits to be derived from management of units of the

National Forest System is consistent with the principles of multiple use and sustained yield. (Federal Register/Vol. 47, No. 190/9/30/81/219.3 Definitions and Termination and Terminology, page 43039).

Net Value Change (or Net Resource Value Change): The sum of the changes resulting from increases (benefits) and decreases (damages) in the value of outputs from the land area affected as a consequence of fire.

No Action Alternative: The most likely condition expected to exist in the future if current management direction would continue unchanged.

Non-declining Yield: A level of timber production planned so that the planned sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceeding decade.

Non-forest Land: Lands never having or incapable of having 10 percent or more of the area occupied by forest trees, or lands previously having such cover and currently developed for non-forest use.

Non-game Species: Animal species that are not usually hunted in this state. This classification is determined by the State Legislature.

Non-market Value (Non-market Output): Goods, services and uses which are not commonly bought or sold in existing markets. For use in comparing alternatives, they are assigned dollar values derived from willingness-to-pay analyses. See also "Intangible Values."

Non-motorized Use: Land uses requiring or largely dependent on isolation from motor vehicles and/or roads.

Nonpoint Source Pollution: Pollution generated by dispersed activities on the land, such as road construction, some silvicultural practices, and recreation site development.

Northern Hardwoods: Forest type similar to Allegheny Hardwoods but containing less Black Cherry and Sugar Maple.

OGM: Acronym for "oil, gas, and minerals."

Objective: A clear and specific statement of planned results to be achieved within a stated time period. The results indicated are those which are designed to achieve the desired condition represented by the goal. An objective is

	measureable and implies precise time-phase steps to be taken and resources to be used which, together, represent the basis for defining and controlling the work to be done.
Obliteration:	The returning of the land occupied by a road or trail to production.
Occupancy Trespass:	The illegal occupancy or possession of National Forest land.
Off-road vehicle (ORV):	Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, swampland, or other natural terrain; except that such term excludes: (a) any registered motor boat; (b) any fire, military, emergency, or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes; and (c) any vehicle use expressly authorized by the respective agency head under a permit, lease, or contract.
Old Growth:	A stand of trees older than normal rotation age for the type that provides important habitat conditions not normally found in younger stands.
Opportunity Costs:	The value of benefits foregone or given up due to the effect of choosing another management alternative that either impacts existing outputs or shifts resources away from other activities so that they are no longer produced and their benefits are lost.
Output Coefficient:	Values which relate an acre of land to a particular quantity of output in a specific period of time.
Overstory:	Relative to even-aged stands: the mature trees which overtop the younger trees.
PAOT:	See "Persons at One Time."
Partial Retention (PR):	A visual quality objective which, in general, means human activity may be evident but must remain subordinate to the characteristic landscape.
Perennial Stream:	Streams that flow throughout the year.
Persons at One Time:	A creation/capacity measurement term indicating the number of people that can comfortably occupy or use a facility or area at one time.

Planning Area:	The area of the National Forest System covered by a Forest Plan.
Planning Criteria:	Criteria prepared to guide the planning proces and management direction.
Planning Problem:	A major problem of long-range significance, derived from public issues and management concerns, to be addressed when formulating Forest Plan Alternatives.
Plantation:	A Forest crop or stand raised artificially, either by seeding or planting of young trees.
Pole Timber:	As used in timber survey, a size class definition: trees 6.0 to 10.9 inches at DBH. As used in logging operations, trees from which pole products are produced, such as telephone poles, pilings, etc.
Post Market:	The market of trees to be used as fence posts; normally four to ten inches in diameter and six to ten feet long.
Pothole:	A small pond, usually less than .1 acre in size, excavated by a bulldozer, which provides nesting habitat and escape cover for ducks (such as mallards, teal, wood ducks and black ducks).
Preferred Alternative:	The alternative favored for implementation by the Forest Service based on relative merits including physical, biological, social, and economic considerations and the agency statutory missions.
Prescribed Fire:	A fire burning under specified conditions that will accomplish certain planned objectives. The fire may result from either planned or unplanned ignitions. Use of unplanned ignitions (such as allowing a lightning fire to burn) for this purpose must have prior approval by the Regional Forester.
Prescription:	See "Management Prescription."
Present Net Value (PNV):	Discounted benefits less discounted costs associated with providing all outputs to which monetary values can be assigned.
Preservation (P):	A visual quality objective that provides for ecological change only.

Prime Habitat:	The best of the most critical habitat for individual species.
Primitive ROS Class:	The classification of the recreation opportunity spectrum (ROS) characterized by an essentially unmodified environment, where trails may be present but structures are rare, and where probability of isolation from the sights and sounds of humans is extremely high.
Public Issue:	A subject or question of widespread public discussion or interest regarding management of National Forest System lands and identified through public participation.
Pulpwood:	The wood from trees used to make paper.
Q-Factor:	Q-Factor is a means of describing the distribution of tree size classes in an uneven-aged stand. It is the ratio of trees in successive 2-inch diameter classes. For example, a "q" of 1.5 means there are 1.5 times as many 10-inch trees as there are 12-inch trees; 1.5 times as many 12-inch trees as there are 14-inch trees, etc. The lower the "q" ratio, the more large trees there are in proportion to small trees. Ratios of 1.3 to 1.5 are recommended for timber production on the Allegheny National Forest. Ratios at the lower end of this range are better where the objective is to provide large trees to benefit aesthetics.
ROS Class:	See "Recreation Opportunity Spectrum."
RPA:	Forest and Rangelands Renewable Resource Plananing Act of 1974.
RPA National Assessment:	A document compiled by the Secretary of Agriculture every ten years which contains facts and analyses to develop and guide public and private forest and rangeland policies and programs.
RPA National Program:	A document compiled by the Secretary of Agriculture every five years which outlines Forest Service programs for National Forest System management, cooperative assistance to states and private landowners, and research.
RVD:	See "Recreation Visitor Day."
Raptor:	Predatory bird. Includes hawks, owls and eagles.

Reclamation: Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with the predetermined land management plan.

Record of Decision: The documentation of what the decision was, the date, and a statement of reasons for the decision.

Recreation Opportunity Spectrum (ROS): A system of classifying the range of recreational experiences, opportunities and settings available on a given area of land. Classifications are:
Primitive (P)
Semi-primitive Motorized (SPM)
Semi-primitive Non-motorized (SPNM)
Roaded Natural (RN)
Rural (R)
Urban (U)

Recreation Residence Site: House or cabin permitted on National Forest System land for the recreational use of the owner, but not as a primary residence.

Recreation Visitor Day (RVD): Recreational use of National Forest System land which aggregates twelve hours. It may consist of one person for twelve hours, two people for six hours, or any equal combination.

Recreation River: Wild and Scenic Rivers Act usage: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Reforestation: The natural or artificial restocking of an area with trees.

Reforestation Backlog: Areas that need to have trees re-established. This can be done by planting, seeding, or preparing the site for natural regeneration.

Regeneration: (1) The actual seedlings and saplings existing in a stand. (2) The act of establishing young trees naturally or artifically.

Regeneration Cut: Removal of trees with the intention of establishing a new crop of seedlings.

Regulated: Forest land managed for timber production under sustained yield principles.

Removal Cut: See "Shelterwood Cut." Final stage of shelterwood harvest system.

Research Natural Area: Land areas classified by order of the Chief of the Forest Service containing natural plant communities that have not been modified by humans and which are protected and studied to obtain more information about the ecosystem.

Reserved and Outstanding Mineral Rights: Privately-owned rights to develop and extract subsurface minerals from National Forest lands.

Resort: A large recreation site which provides support facilities for many recreation opportunities, both on and off site. These sites provide facilities for parking, eating, overnight accommodations, equipment rental, supplies, gasoline, meeting rooms, and lounges. An example of a privately-financed resort on National Forest land is a ski area in Colorado. These areas are usually financed and operated by a private corporation under permit to the USDA, Forest Service.

Rentention (R): A visual quality objective which, in general, means human activities are not evident to the casual forest visitor.

Revegetation: The re-establishment of a plant cover. This may take place naturally, through the reproductive process of existing flora; or artificially, through the direct action of humans.

Riparian Area; A term used by the Forest Service which includes stream channels, lakes, immediately adjacent terrestial ecosystem, flood- plains, and wetlands.

Riprap: Material such as rock, logs, and concrete which are placed along a water course to stabilize the banks.

Roaded Natural ROS Class: A classification of Recreation Opportunity Spectrum that characterizes a predominantly natural environment with evidence of moderate permanent alternate resources and resource stabilization. Evidence of the sights and sounds of humans is moderate, but in harmony with the natural environment. Opportunities exist for both social interaction and moderate isolation from human sights and sounds.

Rotation: The period of time (for stands under even-aged management) between the initial establishment of a stand of timber and the time when it is considered ready for cutting and regeneration.

Rotation, Pathological: The maximum rotation through which species may be grown and yet prevent undue loss from disease. Generally for stands, this is the point where total volume per acre starts to significantly decrease from disease.

Roundwood: Trees that are used without being milled (fence posts, telephone poles, pulpwood, etc.).

Rural ROS Class: A classification of Recreation Opportunity Spectrum that characterizes an area on which the sights and sounds of humans are prevalent and the landscape has been considerably altered by human works.

Salvage: Dead or dying trees which occur in excess of those needed for wildlife, aesthetics, or other purposes. These trees are harvested for production.

Sapling: As used in timber survey, a size class definition: trees 1.0 to 4.9 inches at DBH (diameter at breast height).

Sawtimber: As used in timber survey, a size class definition: trees larger than 11.0 inches at DBH.

Scarification: Loosening of top soil in open areas to prepare for regeneration by direct seeding or natural seed fall.

Scenic Easement: Relative to the Wild and Scenic Rivers Act (P.L. 93-621) 1975, and by definition of the Act: the right to control the use of land (including the air space above such land) within the authorized boundaries of the component of the Wild and Scenic River System, for the purpose of protecting the natural qualities of a designated wild, scenic or recreation river area; but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement.

Scenic River - Wild and Scenic Rivers Act Usage: The rivers or sections of rivers that are free of impoundments, where shorelines or watersheds are still largely primitive and shorelines largely undeveloped, but accessible at places by road.

Sediment: Solid materials, both mineral and organic, that are in suspension, are being transported, or have been moved from their site of origin by air, water, gravity, or ice, and have come to rest on the earth's surface either above or below sea level.

Sediment Yield: Proportion of eroded solids washed into a water course.

Seed Cut: See "Shelterwood Cut." Preparatory phase of shelterwood harvest system.

Seedbed: In natural regeneration, the soil or forest floor in which seed falls. In nursery practices, prepared area which is seeded.

Seedling: As used in timber survey, a size class definition: trees less than one inch at DBH.

Selection Harvest Cut: A system which removes trees individually in a scattered pattern from a large area each year. (1) Individual tree selection cutting involves the removal of selected trees of all size classes on an individual basis. Regeneration is established under the partial shade of the overstory canopy after each cut. (2) Group selection cutting involves the removal of selected trees of all size classes from groups a fraction of an acre to two to three acres in size. Regeneration occurs in the groups under conditions similar to those found in small clearcuts. For a detailed description of selection harvest, see the environmental consequences section of Chapter 4 of the Final EIS.

Semi-primitive Motorized ROS Class: A classification of Recreation Opportunity Spectrum characterized by moderately dominant alterations by humans, with strong evidence of permanent roads and/or trails.

Semi-primitive Non-motorized ROS Class: A classification of the Recreation Opportunity Spectrum characterized by few and/or subtle modifications by humans and with a large probability of isolation from the signts and sounds of humans.

Sensitive Species (S): Species designated by the Regional Forester and included on the Eastern Region Sensitive Species list. The list will include those species identified by criteria below that are known, reported, or suspected to occur on or in the immediate vicinity of the planning area in the Eastern Region. The criteria are:

A. Species is in an officially-proposed status by Federal Register Proposed Rule-making.

B. Species is on a Notice of Review List in the Federal Register (e.g., CFR 45.242, December 15, 1980).

C. Species placed on the Region 9 Sensitive Plant or Animal list at the discretion of the Regional Forester if he deems that they require special management attention. Examples of situations that may cause such listings include:

1. Species common elsewhere, but a disjunct population of unique, popular, or scientific interest occurs on National Forest System land.

2. Locally endemic population in unique habitats that warrant continued monitoring or special management to assure jeopardy is not occurring and will not occur in the future.

Sensitivity Level: As used in Visual Quality Management: A particular degree or measure of viewer interest in the scenic qualities of the landscape.

1 - Most sensitive: 2 - Sensitive: 3 - Least sensitive

Shade Tolerant: A tree or other plant species having the capacity to grow without receiving direct sunlight.

Shelterwood Cutting: A cutting method used in even-aged management. It is the removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand. For a detailed description of shelterwood cutting, see the environmental consequences section of Chapter 4 of the Final EIS.

Silviculture: A combination of actions whereby forests are tended, harvested and replaced.

Site Preparation: Preparation of the ground surface before planting or preparing a seedbed for natural regeneration; includes removal of unwanted vegetation, slash, stumps and roots from a site.

Skid Trail: Travelway used to drag or transport trees from the stump to the road.

Slash: Debris left after logging, pruning, thinning or brush cutting, and large accumulation of debris after wind or fire. It includes logs, branches, bark and stumps.

Snag: A standing dead tree, used by birds for nesting, roosting, perching, courting and/or foraging for food. There are many mammals that use snags for denning and foraging.

Softwood:	A coniferous tree. Trees belonging to the botanical group gymnosperme.
Soil Profile:	A progression of distinct layers of soil beginning at the surface which has been altered by normal soil-forming processes such as leaching, oxidation and accretion.
Spatial Feasibility:	The capacity of a management precription to be practically implemented on the ground.
Special Land Use;	The occupation or reservation of land or water for a particular land use or uses and excluding some other land uses.
Stand (Tree Stand):	An aggregation of trees occupying a specific area and sufficiently uniform in composition, age arrangement, and condition as to be distinguishable from the forest on adjoining areas.
Standard:	A principle requiring a specific level of attainment; a rule to measure against.
Stream:	A channel with defined bed and banks which carries enough water flow at some time during the year to flush out leaves.
Subsoil:	The lower layer of soil surface in which roots normally grow.
Subsurface Rights (Mineral Rights):	Ownership of or right to develop or recover the oil, gas or minerals resources under the land surface.
Succession:	An orderly process of biotic community development that involves changes in species, structure and community processes with time; it is reasonably directional and, therefore, predictable.
Suitable Timber Lands:	Forest lands to be managed for timber production.
Surface Rights:	Ownership of the surface of the land only; right to use the surface of the land on a regulated basis.
Sustained Yield:	The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest without impairment of the productivity of the land.
TSI:	See "Timber Stand Improvement."

Temporary Road: A temporary use of the land for transportation purposes, usually constructed to serve a specific resource activity. On timber sales, these roads are constructed only for the purchaser's use. Occupied land is returned to resource production upon termination of the activity requiring its use.

Thinning: Cutting made in an immature crop or stand, primarily to accelerate the diameter increment (annual growth) of the residual trees, but also by suitable selection, to improve the average form of the trees that remain.

Threatened Species (T): Species listed as threatened nationally by current Federal Register Final Rule-making.

Tiering: Incorporating information contained in an Environmental Impact Statement (EIS), such as the Forest Plan EIS, by reference to subsequent environmental documents.

Timber Stand Improvement (TSI): Usually related to activities conducted in young stands of timber to improve growth rate and form of the remaining trees. Examples are: thinning, pruning, fertilization, and control of undesirable vegetation.

Topsoil: The original or present dark-colored upper soil that ranges from a fraction of an inch to several feet deep.

Traffic Service Levels (TSL): Traffic service levels describe the significant traffic characteristics and operating conditions for a road. These levels are identified as a result of transportation planning activities. Objectives are established for each road and may be expressed in terms of the area and resources to be served, environmental concerns to be addressed, amount and types of traffic to be expected, life of the facility, and functional classification.

Table 3-2 of the Forest Plan Final EIS describes the Road Operational Characteristics for each of the form types or classes of TSL Roads.

Transmission Pipeline: A pipeline which carries gas or liquid from a producing field or central collection facility to a storage or consumption facility, usually over long distances.

Uneven-aged Management: The course of actions involved in maintaining a forest or stand composed of intermingling trees that differ markedly in age. For a detailed description of uneven-aged management, see the environmental consequences section of Chapter 4 of the Final EIS.

Unregulated (Pre-1980 Terminology): Forest land that is suitable and available, but not organized for timber production under sustained yield principles; where timber harvest is permissible but is not a goal of management.

Urban ROS Class: A classification of the Recreation Opportunity Spectrum in which the natural setting is dominated by artificial structures, and human sights and sounds predominate.

Utility Corridor: A tract of land of varying width forming a passageway through which various commodities such as oil, gas and electricity are transported.

VIS: See "Visitor Information Service."

VQO: See "Visual Quality Objective."

Variety Class: A particular level of visual variety or diversity of landscape character; described as Distinctive (Class A), Common (Class B), or Minimal (Class C).

Vegetative Manipulation: The change from one vegetation type to another. It can be done using a tractor, chemicals or fire; usually done to increase forage for livestock. It can be a beneficial tool for wildlife management.

Vertical Diversity: The diversity in an area that results from the complexity of the above-ground structure of the vegetation; the more tiers of vegetation and/or the more diverse the species composition, the higher the degree of vertical diversity.

Visitor Information Service: A service provided to the public by National Forests in which the public is supplied with information regarding opportunities or activities on National Forest System land; ususally, but not restricted to, recreational opportunities.

Visual Absorption Capacity (VAC): Indicates the relative difficulty or cost of achieving VQOs; measures the land's capacity to absorb the visual impact of management activities.

Visual Distance Zone: Areas of landscapes denoted by specific distances from the observer. Used as a frame of reference in which to discuss landscape characteristics or human activities. The three zones are foreground (fg), middleground (mg), and background (bg).

Visual Quality Objective (VQO): A desired level of excellence based on physical and sociological characteristics of an area. Refers to degree of acceptable alteration on the characteristic landscape. The five levels are: Preservation, Retention, Partial Retention, Modification, and Maximum Modification.

WFUD: See "Wildlife and Fish User Day."

Water Yield: The total net amount of water produced on the Forest, including streamflow and groundwater recharge.

Watershed: The entire area that contributes water to a drainage or stream.

Wetlands: Areas with shallow standing water or seasonal to year-long saturated soils (includes bogs, marshes and wet meadows).

Whole Tree Removal: Felling and transporting the whole tree with its crown, and sometimes even its roots, for trimming and cross-cutting at a landing or mill.

Wild and Scenic River Corridor: See "Wild River" and Scenic River."

Wild River: Wild and Scenic Rivers Act usage: Those rivers and sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

Wilderness: The National Wilderness Preservation Act of 1964 defines a wilderness as an area of undeveloped, federally-owned land designated by Congress that has the following characteristics:

1. It is affected primarily by the forces of nature, where humans are visitors who do not remain. It may contain ecological, geological or other features of scientific, educational, scenic or historical value.

2. It possesses outstanding opportunities for solitude or a primitive and unconfined type of recreation.

3. It is an area large enough so that contined use will not change its unspoiled natural condition.

Wilderness Area: A Congressionally-designated tract of Federal land retaining its primeval character and influence without permanent improvements or human habitation. Management is intended to retain these characteristics.

Wildfire: Any fire that requires a suppression response.

Wildlife and Fish User Day (WFUD): Wildlife and fish use of National Forest System land which aggregates twelve hours. It may consist of one person for twelve hours, two people for six hours, or any equal combination.

Wildlife Habitat: The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

Wildlife Structure: A site specific improvement of a wildlife or fish habitat, i.e., spring development or dugout to provide water, brushpile for cover, nestbox for bird nesting, or rock and log placement in a stream for fish cover and pool creation, or a gate on a road to control access during critical nesting or brood rearing seasons.

APPENDIX B

Monitoring Plan

APPENDIX B

MONITORING PLAN

Source & Purpose of Monitoring Action	Activity Effect . Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability	Responsibility
36 CFR 219.12(k)(1) A quantitative estimate of performance. Compare accomplishments with Forest Plan Objectives.	Outputs by Management Area and Forest Totals	RVD , WFUD, MBF	Annual	MAR	High	High	Allegheny National Forest
36 CFR 219.12(k)(3) Verify unit costs used in Plan. Build data for Plan revision.	Management Practices	$/Unit	Annual	PAMAR & special cost studies as needed	High	High	Allegheny National Forest
	Management Practices in relation to significant factors that affect cost.	i.e. $/Mile of road construction by land type association	Annual	PAMAR and/or special cost studies as needed	High	High	Allegheny National Forest
36 CFR 219.12(k)(2) Determine if the prescriptions are being implemented within the management areas assigned and as specified in the Forest Plan management direction.	Management Practices and Standards and Guidelines	Compliance check by prescription, by management area and by project-Narrative Report Summary	Annual on a sample basis	Management reviews, Project EA reviews, Sample field surveys RIM, TMIS, MAR, WMIS	Moderate	Moderate	Allegheny National Forest
Verify predicted effects of management practices on environmental elements.	Implementation and effectiveness of BMP's in controlling NPS pollution.	Varies Narrative on Effectiveness	Annually or as necessary on selected OGM, Rec., and Timber projects in decade one.	Impact Monitoring, Field surveys, Sequential Photo Points, Spray cards in buffer strips	Moderate	Moderate	Allegheny National Forest

MONITORING PLAN (con't)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability	Responsibility
	Recreation Opportunities and Visual Quality	Acres by ROS class and VQO	5 Years	Revise Recreation Opportunity Spectrum Map and Visual Quality Objective map	Moderate	Moderate	Allegheny National Forest
36 CFR 219.7(f) To identify emerging issues issues, concerns, ans opportunity from adjacent land owners or other public agencies.	Land owner reaction; Other agency	Number of comments; Narrative	Annual	Letters, meeting, personal contacts, public involvement responses	Moderate	Moderate	Allegheny National Forest
36 CFR 219.19 Monitor population trends of indicator species to maintain viable populations of all wildlife species.	White-tailed Deer American Woodcock Ruffed Grouse Beaver	Population Trend	Annual	Field surveys, PGC, Harvest Data	Moderate	Moderate	Allegheny National Forest Pennsylvania Game Comm. PGC
	Red-shouldered Hawk, Great Blue Heron	Population	Annual	Field surveys	High	Moderate	Allegheny National Forest
	Rattlesnake Yellow-bellied Sapsucker* Pileated Woodpecker* Magnolia Warbler* Black-Throated Green Warbler*, Barred Owl Hermit Thrush	Population Trend	Annual for three years andy every two years thereafter	Field surveys	Moderate	Moderate	Allegheny National Forest
	Brook Trout Walleye *These species will be surveyed	Population Trend	Annual	Stream and Lake surveys	Moderate	Moderate	U.S. Fish and Wildlife Service and PA Fish Commission

MONITORING PLAN (con't)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability	Responsibility
Monitor endangered species to protect, maintain, or enhance key habitat.	Bald Eagle	Population Trend	Annual	Field surveys	Moderate	Moderate	Allegheny National Forest
36 CFR 219.12(k)(5) Assure Lands adequately stocked within five years.	Regeneration Acres	Acres established	First, third, and fifth years	Stocking surveys and Annual report	Very High	Very High	Allegheny National Forest
Determine extent and severity of insect and disease occurrence.	Tree/stand vigor	Acres	Annual	Air surveillance	Moderate	High	Allegheny National Forest State and Private Forestry
Determine if final harvest size limits are appropriate	Timber Final Harvest	Acres	Every 5 years	Field Surveys public comment resource output estimates			Allegheny National Forest
Determine if lands not suited for timber production have become suited	Management Area Allocation	Acres	Every 10 Years	Field Surveys FORPLAN analysis	Moderate	Moderate	Allegheny National Forest
Dispersed and Developed Recreation and Wilderness Problems							
Determine use of recreation opportunities provided to assure appropriate mix that satisfies users.	Use by ROS class for developed and dispersed recreation and wilderness	RVD's	Annual	RIM and MAR	Moderate	Moderate	Allegheny National Forest

MONITORING PLAN (con't)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability	Responsibility
Timber Management Problems							
To verify that we provide the supply of high-quality sawtimber that satisfies demand.	Timber offer, timber sold, timber cut, demand	Acres by method of cut. MBF by product & method of cut. Value by acre, volume, and product	Quarterly and Annual Summary	TMIS, TRANS-EV, TSA, uncut volume under contract	High	High	Allegheny National Forest
Monitor public reaction to vegetation manipulation to assure mitigation measures are adequate.	Public comments aesthetics of clearcutting	Number of comments, Narrative Report	Annual	Letters, telephone calls and personal contacts	Moderate	Moderate	Allegheny National Forest
Oil, Gas, and Mineral Management Problem							
Assure lands are made available for development and verify projected development scenario.	New Minerals Development	Areas impacted and number of producing wells	Every 5 years	Field survey, lease applications	High	High	Allegheny National Forest
Assure effectiveness of cooperative education approach and check compliance	OGM Developments	Development Acceptability	Annually on 25 developments	Allegheny N.F. Evaluation for OGM Developments	Moderate	Moderate	Allegheny National Forest
Wildlife Habitat Management Problem							
Determine trend of game species emphasized in prescriptions to insure planned population standards are met. Some included as indicator species.	Wild Turkey and Bear	Population Trend	Annual	Field survey, harvest data	Moderate	Moderate	Allegheny National Forest Pennsylvania Game Commission

MONITORING PLAN (con't)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability	Responsibility
Determine trends in fish habitat capability and appropriate stocking densities	Allegheny River, Reservoir, Stocked and Native Trout Streams	by Habitat Quality and Species Composition	Annual on sample basis	Stream and lake	Moderate	Low	U.S. Fish and Wildlife Serv. Pennsylvania Fish Commission
Determine wildlife and fish utilization compared to planned use estimates	Fishing and Hunting	Success	Reservoir - 1/decade: Game take - 3/decade	Creel census, game take surveys	Moderate	Moderate	U.S. Fish and Wildlife Serv. Pennsylvania Game Commission

APPENDIX C

Forest-Wide Summaries

APPENDIX C

FOREST-WIDE SUMMARIES

Table C-1 Forest-wide Summary of Management Practices and Total Cost

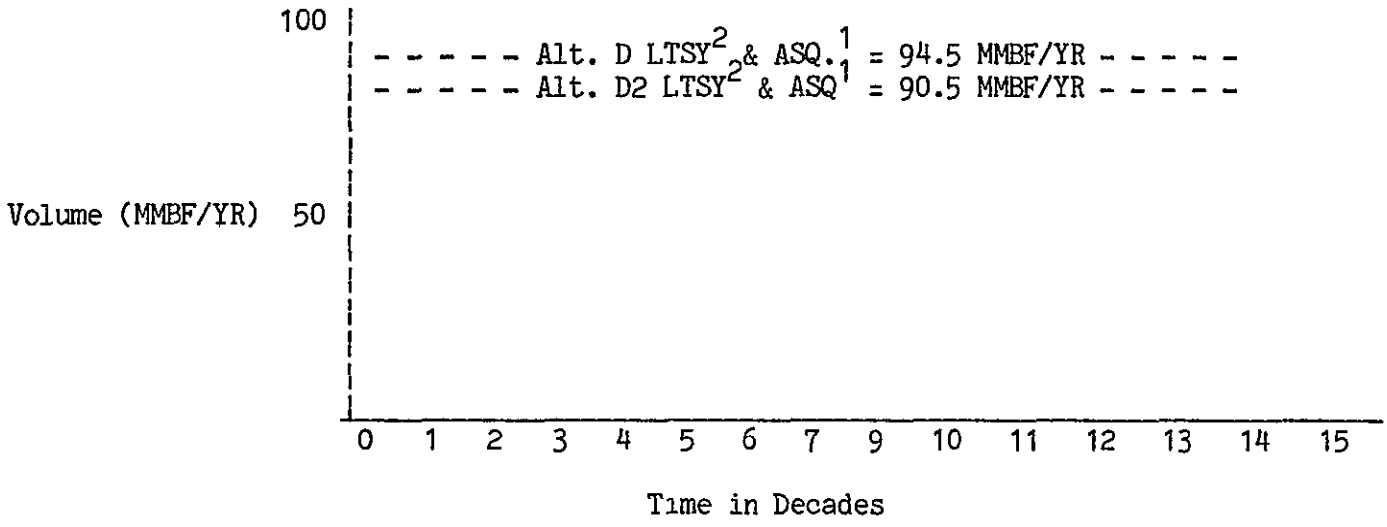
Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)[2]	Projected Decade 2 D	(D2)
Dev. Recreation Area Const. & Expansion[1]					
Allegheny Reservoir Area					
Campgrounds	# of Areas	1	(1)	1	(1)
Motel/Restaurant Complex	# of Areas	1	(1)	0	(0)
Other Forest Areas					
Campgrounds	# of Areas	1	(1)	3	(3)
Boat Launches	# of areas	2	(2)	0	(0)
Dispersed Recreation					
Pedestrian Trail	miles	4.8	(4.1)	4.1	(3.4)
Motorized Winter	miles	1.1	(1.1)	1.1	(1.1)
Motorized Summer	miles	14.5	(14.5)	14.5	(14.5)
Wilderness Management	acres	9719	(9719)	9719	(9719)
Timber Practices					
Final Harvest - Clearcuts	acres	330	(330)	340	(270)
Final Harvest - Shelterwood	acres	2970	(2970)	3060	(2430)
Thinning	acres	9400	(9500)	7800	(10400
Timber Stand Improvement	acres	800	(700)	600	(800)
Selection	acres	600	(600)	0	(0)
Herbicide	acres	2000	(2000)	1800	(1500)
Fertilization	acres	2500	(2500)	1400	(1300)
Fencing	acres	400	(400)	400	(400)
Planting	acres	200	(200)	200	(200)
Site Prep for Natural Regeneration	acres	1800	(1800)	1800	(1400)
Road Construction	miles	23.7	(24.7)	13.4	(18.7)
Road Reconstruction	miles	9.7	(10.1)	5.5	(7.6)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Imp. & Mtnce.	acres	2372	(2361)	2758	(2589)
Wildlife Structures	# of struct.	6	(6)	11	(8)
Fish Structures - Lakes	# of struct.	80	(80)	80	(80)
Warm Water Lake Construction	# of lakes	1/dc	(1/dc)	1/dc	(1/dc)
Energy Mineral Development	acres	429	(4290)	429	(4290)
Common Variety Mineral Development	acres	8	(12)	6	(13)
TOTAL COST	M$	6,475		5,693	

1 Unit of measure for this practice is the number of recreation areas to be completed within the entire decade not an average annual amount

2 D2 is a variation of the Forest Plan that projects the results if a high rate of oil and gas development is experienced during implementation.

Table C-2 Allowable Sale Quantity and Long-Term Sustained Yield Capacity

(Average annual yield per decade within the planning horizon equals long-term sustained yield; 945 million board feet of sawtimber and pulpwood per decade for Alternative D and 905 million for Alternative D2.)



1 Allowable Sale Quantity (ASQ)

The quantity of timber that may be sold from an area of land covered by the Forest Plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.

2 Long-Term Sustained Yield Capacity (LTSY)

The highest uniform wood yield from lands being managed for timber production that may be sustained under a specific intensity of managment consistent with the multiple-use objective.

Table C-3 Timber Resource Land Suitability

Classification	Acres D	Acres (D2)
1. Water	8,305	(8,305)
2. Non-Forest Land	22,561	(22,561)
3. Forest Land	479,664	(479,664)
4. Forest Land Withdrawn from Timber Production	15,621	(15,621)
5. Forest Land Not Producing Crops of Industrial Wood	0	0
6. Forest Land Physically Not Suited:		
Irreversible Damage Like to Occur	450	(450)
Not Restockable Within 5 Years	450	(450)
7. Forest Land - Inadequate Information[1]	0	0
8. Tentatively Suitable Forest Land (Item 3 minus items 4, 5, 6, & 7)	463,143	(463,143)
9. Forest Land Not Appropriate for Timber Prod.[2]	43,118	(55,667)
10. Not Suited Forest Land[3] (Items 4, 5, 6, 7, and 9)	59,639	(72,188)
11. Total Suitable Forest Land (Item 3 minus item 10)	420,025	(407,476)
12. Total Net National Forest Area (Items 1, 2, and 3)	510,530	(510,530)

1 Lands for which current information is inadequate to project responses to timber management.

2 Lands identified as not appropriate for timber production due to: (1) assignment to other resource uses to meet Forest plan objectives; (2) to meet management requirements; and (3) not cost-efficient in meeting Forest plan objectives over the planning horizon.

3 Lands identified as not suited for timber production are examined every ten years and analyzed through the land management planning process to determine their suitability for timber production.

Table C-4 Allowable Sale Quantity, Timber Sale Program Quantity, and Vegetation Management Practices - Annual Average for the First Decade

Practice	Acres D	Acres (D2)	Allowable Sale Quantity: Sawtimber MMBF D	Sawtimber MMBF (D2)	Sawtimber MMCF D	Sawtimber MMCF (D2)	Other Products MMBF D	Other Products MMBF (D2)	Other Products MMCF D	Other Products MMCF (D2)
Regeneration Harvest										
Clearcut	330	(330)	2.5	(2.5)	.4	(.4)	2.5	(2.5)	.4	(.4)
Shelterwood	2970	(2970)	22.8	(22.2)	3.6	(3.5)	22.6	(23.0)	3.6	(3.6)
Intermediate Harvest										
Commercial Thinning	9400	(9500)	10.6	(10.0)	1.7	(1.6)	30.1	(27.0)	4.7	(4.3)
Selection Harvest	600	(600)	2.4	(2.3)	.4	(.4)	1.0	(1.0)	.2	(.2)
TOTAL ALLOWABLE SALE QUANTITY[1]			38.3	(37.0)	6.1	(5.9)	56.2	(53.5)	8.9	(8.5)
Timber Stand Improvement[2]	800	(700)								
Regeneration Practice										
Fencing	400	(400)								
Aerial Fertilization	2500	(2500)								
Site Preparation For Natural Regeneration	1800	(1800)								
Planting	200	(200)								
Herbicide	2000	(2000)								
Additional Sales, Unsuitable Land[3]			2.0	(2.0)	.3	(.3)	2.0	(2.0)	.3	(.3)
OGM Clearing			.3	(3.1)	.05	(.5)	.5	(4.9)	.1	(.8)

1 Includes only chargeable volumes from suitable lands.

2 Includes non-commercial pulpwood treatment in commercial thinnings

3 Timber Management on Unsuitable Lands - A limited amount of unscheduled timber harvests including thinnings, clearcuts, & selection cuts will occur in MA 6.3 to meet wildlife management objectives. In MA 7, unscheduled timber harvests may occur within the developed recreation sites to maintain the visual, recreation, & safety emphasis within each area. These will most often be single tree or group selection cuts. Timber harvesting in MA 6.4 and MA 8 will also be unscheduled. In the Kane Experimental Forest, harvesting will meet the objectives of each research project. In the other areas, it will maintain user safety, or it will be associated with private mineral development. In MA 9.1, commercial timber harvesting will include only salvage sales or sales associated with private mineral development.

Forest-wide Summaries

Table C-5 Present and Future Forest Conditions

	Unit of Measure	Suitable Land D	Suitable Land (D2)	Unsuitable Land D	Unsuitable Land (D2)
Present Forest (Decade 1)	MMCF*	758	(715)	69	(62)
Growing Stock	MMBF*	4798	(4526)	437	(392)
Annual Net Growth	MMCF*	15	(14)	1	(1)
	MMBF*	95	(89)	8	(8)
Future Forest (Decade 15)	MMCF*	625	(606)		
Growing Stock	MMBF*	3956	(3836)		
Annual Net Growth	MMCF	17	(16)		
	MMBF	108	(101)		

Rotation Ages Chosen (Existing and Regenerated Stands)

Northern Hwds.	Years	80 to 200
Allegheny Hwds.	Years	50 to 150
Oak	Years	80 to 200

Age Class Distribution Thousands of Acres suitable lands	Age Class (YR)	Present Forest	Future Forest D	Future Forest (D2)
	0 - 30	14	129	(128)
	31 - 50	22	101	(88)
	51 - 70	182	66	(77)
	71 - 90	157	37	(40)
	91 - 110	28	16	(16)
	111+	4	52	(52)
	Uneven-aged	0	6	(6)
	TOTAL	407	407	(407)

*Volumes include sawtimber and pulpwood.

Table C-6 Rotation Ages of Existing Stands Assigned Management Prescriptions 3 and 6.2

Rotation Age	Timber Type (Thousands of Acres) AH D	AH (D2)	NH D	NH (D2)	Oak D	Oak (D2)	TOTAL D	TOTAL (D2)
60	26	(26)	0	(0)	0	(0)	26	(26)
70	7	(0)	0	(0)	0	(0)	7	(0)
80	46	(26)	0	(6)	0	(1)	46	(33)
90	43	(33)	0	(<1)	22	(16)	65	(49)
100	45	(30)	8	(9)	3	(8)	56	(47)
110	22	(68)	3	(1)	<1	(1)	25	(71)
120	17	(28)	1	(7)	13	(15)	31	(50)
130	41	(12)	0	(5)	4	(2)	45	(19)
140	30	(24)	13	(14)	0	(0)	43	(38)
150	0	(10)	0		0	(0)	0	(10)
160	0		0		0	(5)	0	(5)
170	0		0		0		0	
180	0		0		2		2	
190	0		0		0		0	
200	0		≤1		1		1	
TOTAL	277	(257)	25	(42)	45	(48)	347	(347)

Table C-7 Timber Productivity Classification For Forest Land
(Thousands of Acres)

Potential Growth (cubic feet/acre/year)	Suitable Land D	(D2)	Unsuitable Land[1] D	(D2)
Less than 20	0		0	
20- 48	205	(200)	35	(34)
50- 84	218	(212)	4	(4)
85-119	0		0	
120-164	0		0	
165-224	0		0	
225+	0		0	

1 Does not include 8,300 acres of water area in the Allegheny Reservoir or non-Forest land (see Table C-3)

Table C-8 Forest-wide Summary of Recreation Investments for the First Decade

Area Location and Name	Type of Area
Allegheny Reservoir Area	
Willow Bay	Campground Expansion
Dewdrop Bank Fishing	Handicap Bank Fishing Trail
Webbs Ferry Bank Fishing	Handicap Bank Fishing Trail
Kinzua Beach	Motel/Restaurant (PVT Investment)
Other Forest Areas	
Arroyo Boat Launch	Boat Launch
Barnes Boat Launch	Boat Launch
Allegheny River Trailhead	Trailhead Parking/Picnic Area
Allegheny River Bank Fishing	Trail below "Dam"
Arroyo Bank Fishing	Trail along Clarion River
Mayburg Bank Fishing	Trail along Tionesta Creek

Table C-9 Timber Sale Schedule for 1986, 1987, and 1988

Timber Sales By Year And Management Area	Location		Volume	Acres by Method of Cut			Miles of Road	
	District	Compartment	MBF	FH	TH	Sel	Const	Reconst
Management Area 1 - 1986								
Crow Run**	Ridgway	103	500	34	36			
Subtotal	Forest	--	500	34	36	0	0	0
Management Area 3 - 1986								
Oven Bird	Sheffield	98	1215		166			
Pebble Run	"	56	695		35			0.8
OGM	"	All	750					
Firewood Sales	"	All	250					
Small Sales	Marienville	All	300	45				
Kellettville*	"	29	2000	40				
FR 486 Salvage*	"	7	568	29	54			
Collins Salvage*	"	44	897	63	34		0.5	0.6
Forest Road 361	"	31	500	25	25			
Big Bridge*	"	85	750	26	73		0.7	
Beaver No. 2*	"	50	3000	80	200		0.8	0.8
Tubbs Run*	"	2	2000	100	50		1.0	
Pigeon Hill*	"	2,3	1000	50	30			
Starr*	"	12	200	20	10			
Whig Hill*	"	19	300	30				
Hunter Run*	"	117	200	20	10			
Left-over	"	72	750	49			0.4	
Bear Creek	"	21-25,28	600			350	1.5	
Watson Branch	"	102	1500	25	200			1.0
Rappe Run III	"	100,101	1100	50	100			1.4
Lagoon	Bradford	54,52,94	1053	36	91		0.5	
Trail Hollow	"	3	1298	46	128		0.3	
Schoolhouse Hollow	"	4,35	848		218			
Coal Knob	"	87	750		140			
Buck Lick	"	38	1533	60	36			

* The timber sales marked with an asterisk are salvage sales related to the 5/31/85 tornado damage.

** This timber sale was prepared and approved prior to the issuance of the final Forest Plan. Even so, the timber sale activities proposed support the objectives of Management Area 1 and are considered wildlife habitat improvement.

C-9 (con't) Timber Sale Schedule for 1986, 1987, and 1988

Sale Name	Location: District	Location: Compartment	Volume MBF	Acres by Method of Cut: FH	TH	Sel	Miles of Road: Const	Reconst
Old Tower	Bradford	38,39	1200	98	38		0.2	
Camp Run	"	63,64	4840	152	587		0.8	2.0
Porter Hollow	"	26,27	1200		450		1.0	
Optional Wood, Ranger Sales, and OGM Sales	"	All	960					
Birds Nest Salvage*	Ridgway	25	2200	191	35			
Nansen BD Salvage*	"	42,49	2200	129	60		0.9	
Hoffman Run BD Salvage*	"	36,37	1800	82	50			
Benton BD Salvage*	"	43	700	29	140		0.7	
133 BD Salvage*	"	25	400	19	20		0.3	
South Side BD Salvage*	"	29	2100	101	10			
West Kane BD Salvage*	"	29	2100	93	30		0.4	
Friday Night BD Salvage*	"	29	1900	131				
66 BD Salvage*	"	41	1400	61	50			
McKinley BD Salvage*	"	42	700	38	30		0.2	
Otter Run	"	86	1800	80	74			
Tin Shanty	"	97	400	38				
Unplanned	"	All	300					
Subtotal	Forest	--	50257	2036	3174	350	10.2	7.0
Management Area 6.1-1986								
McKean Salvage	Sheffield	128,129	1700	116	16			
Dark Hollow	"	134	1497	28	17			
Pebble Run	"	56	1200	40				
Regan Run	"	142	1440	40	125			
Yellow Lilly	"	89	900	--	210			
Forest Road 361	Marienville	31	500	25	25			
Small Sales	"	All	300	45				
Tinkertown	Bradford	1	2600	31	500		1.1	
Coal Knob	"	87	250		44			
Subtotal	Forest	--	10387	325	937		1.1	
Management Area 6.2-1986								
Stoney Point*	Marienville	23,24	1000	20	50		0.8	
Bear Creek	"	21-25,28	1400			650		
Subtotal	Forest	--	2400	20	50	650	0.8	

Forest-wide Summaries

C-9 (con't) Timber Sale Schedule for 1986, 1987, and 1988

Sale Name	Location: District	Location: Compartment	Volume MBF	Acres by Method of Cut: FH	TH	Sel	Miles of Road: Const	Reconst
Management Area 8 - 1986								
West Side Salvage	Sheffield	106	1520	60	150			
Pipeline Salvage	"	106	1000	116				
South Side Salvage	"	106	1000	84				
Middle Salvage	"	106	1100	129				2.0
East Side Salvage	"	106	1135	125				
Circle Salvage	"	106	1200	125				
Subtotal	Forest	--	6955	639	150		0.0	2.0
FOREST TOTAL - 1986	Forest	--	70499	3054	4347	1000	12.1	9.0
Management Area 3 - 1987								
Picnic Run	Sheffield	18,19	3400	43	318		1.1	
Fenced Clearcut	"	96	1200	60				
Fox Den	"	122	960	38				
Brown Run	"	10	640	19	34			
Henrys Mill	"	102	1200	40	200			
Little Arnot	"	103	600	13	117			
Ott Run	"	9	300		84			
Messenger Run	"	111,112	1900		127			
Camp 13	"	74	1800	60	15		1.0	
Cherry Run	"	108-110	2100	49	452			
Whig Hill	"	152	250		70			
Grunder Run	"	4	1500	100				
OGM	"	All	1050					
Firewood Sale	"	All	500		200			
Final Harvest	Marienville	All	2000	100				
Final Harvest	"	All	2000	100				
Heli-stat	"	60,61	800	42				
Wagner Run	"	99,110	3000	75	600		1.5	
Small Sales	"	D-wide	1200		90			
Balltown	"	37	1500	25	200		1.0	
Sheffield Junction	"	104	1200		400		1.5	
Dump Town	"	55	1500		400		1.0	
Goat Farm	"	74	500		50			
Powder House	"	49	2000	50	250			1.0
Turkey Pen	"	43	500	25				
Dog Trial	"	73	1500	25	150		1.0	
Wildbird II	"		1300	50	100			1.0

C-9 (con't) Timber Sale Schedule for 1986, 1987, and 1988

Sale Name	Location: District	Location: Compartment	Volume MBF	Acres by Method of Cut: FH	TH	Sel	Miles of Road: Const	Reconst
Townline Run	Bradford	74	2650	100	336		3.0	
Music Mountain	"	68,69	3960	54	405		1.7	
Kennedy Springs	"	66,67	4874	140	474		3.8	
Optional Wood, Ranger Sales, and OGM Sales	"		250					
Linn Buck A Thin	"	36	563		163			
Linn Buck B Thin	"	35	580		151			
Linn Buck C Thin	"	35	565		115			
Goose Pond	Ridgway	8,9	2100	186	25		0.1	
Square	"	25	1200	55	232		0.5	
Tip Top	"	39,40	2000	125	86	30		
Turkey Roost	"	66	1000	82	22			
White Pine Run	"	71	1200	100				
Hawks Nest	"	87	2500	97	46		1.0	
Reservoir	"	99	700	50	50			
South Branch	"	14	2200	89	230		2.0	2.0
Herringbone	"	35	2300	130	292			
Ludlow Pine	"	20	400	0	70			
Durant City	"	36,37	1000	70	0			
Rerun	"	68,69	1500	40				
Turkey Track	"	85	1500	80	100		1.0	
Unplanned Sales	"	All	400					
Subtotal	Forest	--	69842	2312	6654	30	19.2	4.0
Management Area 6.1-1987								
Wildlife Cutting	Sheffield	54,60,192	600	90				
Subtotal	Forest	--	600	90				
Management Area 6.2-1987								
Briggs Run	Bradford	50,51,52	3500	60	900		1.8	
Subtotal	Forest	--	3500	60	900		1.8	
FOREST TOTAL - 1987	Forest	--	70792	2462	7554	30	21.0	4.0

Forest-wide Summaries

C-9 (con't) Timber Sale Schedule for 1986, 1987, and 1988

Sale Name	Location: District	Location: Compartment	Volume MBF	Acres by Method of Cut: FH	TH	Sel	Miles of Road: Const	Reconst
Management Area 3 - 1988								
Otter Track	Sheffield	135	1000					
Hoot Owl	"	32	1250		149			
Wood Sorrel	"	37	2500	100	150		1.5	
Pigeon Run	"	105	1500		300		0.5	
Hawkeye	"	118	1600		200			
Twin Pines	"	145	500		100			
Wakerobin	"	14	1000		100			
	"	30	600	40				
Roystone Station	"	63,64	1500		100			
Spade Four	"	20	1000	40	50		0.5	
Raven Nest	"	94	1000					
OGM	"	All	750	50				
Old Pit	"	38	1100	50	50			
Rock Run	"	109	1100	40	100			
Final Harvest	Marienville	All	3000	150				
Final Harvest	"	All	3000	150				
Watson Farm II	"	103	2000	25	400		1.0	
Small Sales	"	All	1200		180			
Coon Creek	"	26	400	10	50			
Little Salmon	"	34	800	20	245			1.0
Trail Sale II	"	36	800		80			1.0
Salmon Creek	"	38	1400	24	307		2.0	
Millstone	"	60	500		150		1.0	
Loleta Dog Trial	"	62	600		100		0.5	
Pigeon	"	85	800	30	240		1.0	
Thad Shanty III	"	88	1200	20	240			1.0
Bogus Run	"	114	1900	20	300		1.0	
Reck Brand	"	13	500		350		0.5	
208 Extension	"	10	500		400		1.5	
Branch III	"	32	500	25	100			1.0
Gypsy I	"	65,66,67	650	40		200	1.5	

C-9 (con't) Timber Sale Schedule for 1986, 1987, and 1988

Sale Name	Location: District	Location: Compartment	Volume MBF	Acres by Method of Cut: FH	TH	Sel	Miles of Road: Const	Reconst
Klondike	Bradford	45	1200	39			1.2	
Blacksnake	"	81	1000	60	120		1.0	
Coon Run	"	4,5,7	4000	125	600			
Dry Brook	"	25,27	2800	50			2.0	
Irishtown	"	70,71	2000	70				
Yaeger Branch	"	6	1900	30	400		0.5	
Westline II	"	61,62	900	90				
Ranger Sales, Optional Wood, OGM Settlement	"	All	600				1.0	
Circle	Ridgway	10,11	2300	80	240			
Red Mill	"	82	600	50	40		0.2	
West Branch	"	59	1400	40	150		1.0	
Jury	"	5	2400	100	120		1.5	
Chaffee	"	45	1200	53	100			
Small Sales	"	All	100					
Subtotal	Forest	--	57000	1601	6141	200	20.9	4.0
Management Area 6.1-1988								
Wildlife Cutting	Sheffield	55,66	600	90				
Devils Hollow	Marienville	15	1500		450		2.0	
Ross Run	"	18	500	25		150	1.0	
Gypsy I	"	65,66,67	250	10		200	0.5	
Subtotal	Forest	--	2850	125	450	350	3.5	
Management Area 6.2-1988								
TGT	Ridgway	51	2600	108	340		1.3	
Cherry Tree Run	"	56	2300	50	224		2.2	
Rooster	"	57	2400	40	285		2.3	
Old Camp	"	55,67	3200	180	250		1.0	
Subtotal	Forest	--	10500	378	1099		6.8	
FOREST TOTAL - 1988	Forest	--	71900	2124	7760	550	31.2	4.0

Forest-wide Summaries

C-10 Annual Timber Implementation Summary by Management Area for Decade 1 (1986-1995)

Forest Totals by Year and Management Area (MA)		D - Low Oil and Gas Demand						(D-2) - High Oil and Gas Demand					
		Volume	MAcres by Method of Cut			Miles of Road		Volume	MAcres by Method of Cut			Miles of Road	
Year	MA	MBF	FH	TH	Sel	Const	Reconst	MBF	FH	TH	Sel	Const	Reconst
1986	1	500	34	36	0	0	0	500	34	36	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	50257	2036	3174	350	10.2	7.0	50257	2036	3174	350	10.2	7.0
	6.1	10387	325	937	0	1.1	0.0	10387	325	937	0	1.1	0.0
	6.2	2400	20	50	650	0.8	0	2400	20	50	650	0.8	0
	8[1]	6955	639	150	0	0.0	2.0	6955	639	150	0	0.0	2.0
	TOTAL	70499	3054	4347	1000	12.1	9.0	70499	3054	4347	1000	12.1	9.0
1987	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	69842	2312	6654	30	19.2	4.0	69842	2312	6654	30	19.2	4.0
	6.1	600	90	0	0	0	0	600	90	0	0	0	0
	6.2	350	60	900	0	1.8	0.0	350	60	900	0	1.8	0.0
	TOTAL	70792	2462	7554	30	21.0	4.0	70792	2462	7554	30	21.0	4.0
1988	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	58550	1601	6141	200	20.9	4.0	58550	1601	6141	200	20.9	4.0
	6.1	2850	125	450	350	3.5	0.0	2850	125	450	350	3.5	0.0
	6.2	10500	378	1099	0	6.8	0	10500	378	1099	0	6.8	0
	TOTAL	71900	2124	7760	550	31.2	4.0	71900	2124	7760	550	31.2	22.2
1989	2	4950	172	503	30	1.0	.1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9	2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4	.2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9	.3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2	3.1	98830	3623	10762	631	25.8	12.6
1990	2	4950	172	503	30	1.0	.1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9	2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4	.2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9	.3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2	3.1	98830	3623	10762	631	25.8	12.6
1991	2	4950	172	503	30	1.0	.1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9	2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4	.2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9	.3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2	3.1	98830	3623	10762	631	25.8	12.6

1 Volume in Management Area 8 are salvage sales related to the 5/31/85 tornado damage.

C-10 (con't) Annual Timber Implementation Summary by Management Area for Decade 1 (1986-1995)

Forest Totals by Year and Management Area (MA)		D - Low Oil and Gas Demand					(D-2) - High Oil and Gas Demand					
		Volume	MAcres by Method of Cut			Miles of Road	Volume	MAcres by Method of Cut			Miles of Road	
Year	MA	MBF	FH	TH	Sel	Const / Reconst	MBF	FH	TH	Sel	Const	Reconst
1992	2	4950	172	503	30	1.0 / .1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9 / 2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4 / .2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9 / .3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2 / 3.1	98830	3623	10762	631	25.8	12.6
1993	2	4950	172	503	30	1.0 / .1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9 / 2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4 / .2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9 / .3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2 / 3.1	98830	3623	10762	631	25.8	12.6
1994	2	4950	172	503	30	1.0 / .1	3392	124	366	22	.8	.1
	3	84335	2921	8567	509	17.9 / 2.5	80045	2932	8715	511	20.9	10.0
	6.1	6387	222	649	39	1.4 / .2	6383	236	700	41	1.7	1.8
	6.2	8874	308	900	53	1.9 / .3	9010	331	981	57	2.4	.7
	TOTAL	104546	3623	10619	631	22.2 / 3.1	98830	3623	10762	631	25.8	12.6
1995	2	4950	172	503	30	1.1 / .1	3392	124	366	22	.7	.1
	3	84322	2920	8573	511	18.1 / 2.5	80044	2931	8720	513	23.6	5.9
	6.1	6387	222	649	39	1.4 / .2	6383	236	700	41	1.5	1.7
	6.2	8874	308	900	54	1.9 / .2	9010	331	981	58	2.1	.7
	TOTAL	104533	3622	10625	634	22.5 / 3.0	98829	3622	10767	634	21.1	8.4
TOTAL - DECADE 1 (ALL MA's)		945000	33000	94000	6000	237.0 / 97.0	905000	33000	95000	6000	247.0	101.0

Table C-11 Summary of Other Benefits for Scheduled Timber Sales[1]

Timber Sales by Year and District	Dispersed Recreation			Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
	Parking	Motor Access	Non-Motor Access						
1986 - SHEFFIELD									
McKean Salvage			X		X		X		
Dark Hollow					X				
Oven Bird	X						X		
Pebble Run					X		X		
Regan Run					X		X		
West Side Salvage									
Pipeline Salvage									
Southside Salvage			X						
Middle Salvage			X						
Eastside Salvage									
Circle Salvage							X		

1 This table illustrates the multiple benefits that are anticipated as a result of the proposed vegetative treatments. It is tied directly to the benefits and objectives stated in the Forest Plan.

It should also be noted that this table does not address all of the priced benefits and environmental effects. Chapters 4 of the Forest Plan and Final EIS contain additional information on the output objectives by Management Area and anticipated environmental effects, respectively.

The following definitions were used in preparing this table:

Parking---Provide needed off-road parking for recreationist, hunter, dispersed camper, and fisherman where current parking is not adequate.
Motor Access---Provide new access (where none existed before) that will remain open to the public for motorized vehicle use at least part of the year.
Non-Motor Access---Provide new non-motorized access to an area using roads/trails closed to all motor vehicles. This type of access was not be available prior to the sale.
Visual Quality Improvement---Sale Areas around or near highly sensitive travelways and trails where visual quality or diversity may be improved through vista cutting, small opening development or special marking instructions.
Increased Habitat Diversity---Sale Area where habitat diversity (i.e. age classes, species composition, permenant openings, shrub openings, conifer inclusions, brood habitat) is increased above the existing diversity.
Maintained Habitat Diversity---Sale areas where existing habitat diversity is maintained.
Firewood---Sale areas that would provide and be open for gathering firewood.
Improve Public Transportation Safety---Sales that result in improving heavily used public transportation routes for safety of users.

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation: Parking	Dispersed Recreation: Motor Access	Dispersed Recreation: Non-Motor Access	Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
1986 - MARIENVILLE									
Small Sales			X		X	X	X		
Kellettville*	X	X	X		-	X	X		
Forest Road 361	X		-		-	X	X		
Big Bridge*	X		X		X	X	X		
Beaver No. 2*			X		X	X	-		
Tubbs Run*			X		X	X	X		
Pigeon Hill*	X					X	X		
Stoney Point*	X		X		X	X	X		
Starr*						X	X		
Whig Hill*						X	X		
Hunter Run*						X	X		
Left-over	X				X	X	X		
Bear Creek	X		X		X	X	X		
Watson Branch	X		X		X	X	X		
Rappe Run III					X	X	X		
1986 - BRADFORD									
Lagoon			X	X	X	X	X	X	
Trail Hollow	X		X		X		X	X	
School House Hol					X				
Coal Knob				X	X		X		
Buck Lick					X		X		
Old Tower			X		X		X		
Tinkertown			X		X		X		
Camp Run			X		X	X	X		
Porter Hollow			X		X		X		
Cable Logging					X				X[2]

2 Research & educational demonstration sale

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation			Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
	Parking	Motor Access	Non-Motor Access						
1986 - RIDGWAY									
Birdsnest BD Salv					X				X[3]
Nansen BD Salvage			X		X		X		
McKinley BD Salvage			X		X		X		
Benton BD Salvage			X		X				
66 BD Salvage							X		
Friday Night BD Salv					X				
Southside BD Salv					X				
West Kane BD Salv					X				
Hoffman Run BD Salv					X				
133 BD Salvage			X		X		X		
Tin Shanty	X				X		X		
Crow Run	X				X	X			
Otter Run			X			X	X		
1987 - SHEFFIELD									
Picnic Run	X				X		X	X	
Fenced Clearcut					X				
Fox Den					X				
Brown Run	X				X		X		
Henrys Mills	X						X		
Little Arnot					X		X		
Ott Run									
Messenger Run	X		X				X		
Camp 13			X		X				
Cherry Run			X		X		X		
Whig Hill					X		X		
Grunder Run					X	X	X		

3 Stream Rehab. and/or Improvement

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation: Parking	Dispersed Recreation: Motor Access	Dispersed Recreation: Non-Motor Access	Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
1987 - MARIENVILLE									
Final Harvest	X		X		X	X	X		
Final Harvest	X		X		X	X	X		
Heli-stat	X		-		X	X	X		
Wagner Run	X		X		X	X	X		
Small Sales			X		X	X	X		
Balltown	X		X		X	X	X		
Sheffield Junction	X		X		X	X	X	X	
Dump Town	X		X		X	X	X		
Goat Farm			X		X	X	X		
Powder House	X		X		X	X	X		
			-		-	-	-		
Turkey Pen	X		X		X	X	X		
Dog Trial			X		X	X	X		
Wildbird II	X		X		X	X	X		
1987 - BRADFORD									
Briggs Run			X		X				
Townline Run		X		X	X		X		
Kennedy Springs	X		X		X		X		
Music Mountain	X		X		X		X		
Linn Buck A Thin					X		X		
Linn Buck B Thin			X		X		X		
Linn Buck C Thin			X		X		X		

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation			Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
	Parking	Motor Access	Non-Motor Access						
1987 - RIDGWAY									
Goose Pond	X	X	X		X	X			
Square	X					X	X		
Tip Top						X	X		
Turkey Roost	X				X		X		
White Pine Run	X					X	X		
Hawks Nest			X		X		X		
Reservoir	X	X			X			X	X[4]
Turkey Track	X		X			X	X		
South Branch			X			X	X		
Herringbone	X			X		X	X	X	X[5]
Ludlow Pine									
Rerun			X		X		X		
Durant City				X		X	X		
1988 - SHEFFIELD									
Otter Track			X		X	X	X		
Hoot Owl			X		X				
Wood Sorrel			X				X		
Pigeon Run	X				X		X		
Hawkeye							X		
Twin Pines							X		
Wake Robin							X		
Roystone Station	X						X		
Spade Four					X				
Raven Nest			X		X		X		
Old Pit					X				
Roch Run					X				
Wildlife Cutting					X				

4 Water Quality Improvement (in Municipal Watershed)
5 Stream Rehab., Water Quality Improvement

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation			Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
	Parking	Motor Access	Non-Motor Access						
1988 - MARIENVILLE									
Final Harvest	X		X		X	X	X		
Final Harvest	X		X		X	X	X		
Devils Hollow	X	X	X	X	X	X	X		
Watson Farm II	X	X	X		X	X	X		
Small Sales	X		X		X	X	X		
Coon Creek	X		X		X	X	X		
Little Salmon	X		X		X	X	X		
Trail Sale II	X		X		X	X	X		
Salmon Creek	X		X		X	X	X		
Millstone	X		X		X	X	X		
Loleta Dog Trial	X		X		X	X	X		
Pigeon	X		X		X				
Thad Shanty III	X		X		X	X	X		
Bogus Run	X	X	X		X	-	-	X	
Reck Brand	X		X		X	X	X	X	
208 Extension	X		X		X	X	X		
Ross Run	X		X		X	X	X	X	
Branch III	X		X		X	X	X	-	
Gypsy I	X		X		X	-	X	X	
1988 - BRADFORD									
Klondike			X		X		X		
Blacksnake	X		X		X		X		
Coon Run	X		X		X		X		
Dry Brook	X		X	X	X		X		
Irishtown			X		X		X		
Yeager Branch	X	X	X		X				
Westline II					X		X		
Ranger Sales					X		X		

Table C-11 Summary of Other Benefits for Scheduled Timber Sales

Timber Sales by Year and District	Dispersed Recreation			Visual Quality Improvement	Improved Habitat Diversity	Maintained Habitat Diversity	Firewood	Improved Public Transportation Safety	Other
	Parking	Motor Access	Non-Motor Access						
1988 - RIDGWAY									
TGT			X		X		X		
Cherry Tree Run			X		X				
Rooster	X		X	X	X		X		
Circle	X			X		X	X		
Old Camp	X		X	X	X		X		
West Branch					X		X		
Jury	X		X		X				
Chaffee	X				X				
Red Mill	X		X			X	X		

APPENDIX D

Vegetation Management Practices Rationale for Choice

APPENDIX D

VEGETATION MANAGEMENT PRACTICES - RATIONALE FOR CHOICE

A. INTRODUCTION

The National Forest Management Act of 1976 (Section 6(g)(3),(e)(iv) and (f)(i)) and the resulting Secretary's Regulations (36 CFR 219.15) require that vegetation management practices be chosen that are appropriate to meet the objectives and requirements of the land and resource management plan. Appendix D presents the rationale for the vegetation management practices chosen for the various vegetation types on the Allegheny National Forest. In those cases where recent literature or other sections of the Forest Plan or Draft Environmental Impact Statement adequately describe practices, Appendix D will refer the reader to the appropriate documents and sections, but the information will not be repeated.

B. HARVESTING PRACTICES

Silvicultural Systems and Harvest Methods

Timber harvests are designed to achieve a number of resource management objectives. These include developing desired visual conditions, species composition, wildlife habitat, timber product mix, revenues, and carrying out integrated pest management. Although there are many harvest methods used in managing forest lands, there are only two silvicultural systems, even-aged and uneven-aged.

During the prescription development phase of the planning process, we prepared interdisciplinary prescriptions for each major timber type, using a variety of harvesting practices. The following harvesting practices are options in the various timber types for each of the silvicultural systems. They are briefly defined in Appendix A of the Forest Plan, and they are described in detail in the environmental consequences section of Chapter 4 of the Final EIS.

Even-aged System

- Thinning or intermediate cut
- Shelterwood seed cut
- Shelterwood removal cut
- Clearcut

Uneven-aged System

Single tree selection (.1 acre)
Group selection (.1 to .5 acre)

As explained in the glossary in Appendix A, clearcutting regenerates a stand with one cutting entry, while shelterwood cutting regenerates it through more than one. On the Allegheny National Forest, the land appearance following a clearcut is actually very similar to that following the final removal cut using the shelterwood method. All stands which will be clearcut must have adequate advance regeneration, though this may be smaller than that present before a shelterwood removal cut. Clearcutting here does not rely heavily on dormant seed in the leaf litter, so the area will have seedling cover during and immediately following the harvest. The amount of advanced regeneration on the ground generally determines whether we will use the clearcut or shelterwood method; those areas lacking adequate advance regeneration will receive a shelterwood treatment.

Regeneration Harvest Methods for Management Areas

Silvicultural systems and harvest cutting methods vary between management areas. The silvicultural system and harvest cutting methods chosen for each management area achieve the desired mix of conditions or outputs for that area. Each management area provides a little different response to some of the issues, management concerns, and resource opportunities than do the rest of the mangement areas.

Some forest types can be regenerated by more than one silvicultural system and/or harvest method, but other types cannot. Table D-1 shows the harvest methods in each forest type for each management area on the Allegheny National Forest. Following this table there are brief discussions about the rationale for harvest cutting methods in each management area on the Allegheny National Forest. Keep in mind that cutting related to the development of private minerals may occur in any management area, so it will not be discussed any further here.

TABLE D-1 Harvesting Methods on the ANF by Forest Type and Management Area[1]

	FOREST TYPES[2]				
Management Area	Conifer[3]	Aspen	Northern Hdwds.	Alleg. Hdwds.	Oak
2	SEL[4]		SEL	SEL	SEL
1,3, 6.2	CC	CC	SW, CC	SW, CC	SW, CC
5	No Timber Harvest				
6.1, 6.3, 6.4, 7,8	Even-aged or uneven-aged silvicultural system may be used. Some areas will not receive silvicultural treatments.				
9	No Timber Harvest except salvage				

1 The harvesting methods are clearcut (CC), shelterwood (SW), and selection (SEL).

2 A small portion of any management area may be occupied by the forest type not shown in the Table for that management area. An example is a small red pine plantation in the middle of a 3,000-acre area under Management Prescription 3.4. The silvicultural system chosen for the minor inclusion will be the subject of specific site analysis.

3 Various conifer species commonly occur as components of stands dominated by other types and are then included in the system for the stand as a whole.

4 Hemlock

Management Area 1

The prescriptions in this management area emphasize shade intolerant vegetation, the production of roundwood or small diameter sawtimber, and wildlife species associated with early successional stages of vegetation. Therefore, even-aged management will be the predominant silvicultural system, with uneven-aged management occurring only on small inclusions.

Management Area 2

The prescriptions in this area emphasize maintaining a generally continuous forest canopy, shade tolerant vegetation, and wildlife species associated with this kind of habitat. Uneven-aged management (single tree selection and group selection) will be the primary silvicultural system, but even-aged management may occur on small inclusions.

Management Areas 3 and 6.2

These management area prescriptions emphasize shade intolerant vegetation, a variety of age or size class habitat and vegetation types, and production of high quality hardwoods. Wildlife emphasis is on producing deer and turkey in all vegetation types, and squirrel in the oak type. Therefore, even-aged management will be the primary silvicultural system.

Management Area 5

The emphasis here is to provide a wilderness experience and to preserve natural ecosystems. There will be no timber harvesting except for salvage when needed to protect wilderness values or to protect adjacent property from fire or pests.

Management Area 6.1

The emphasis in this area is on dispersed recreation in a semi-primitive motorized setting and on providing wildlife which require mature or overmature forest habitat. Both even-aged and uneven-aged management will be used when and where needed to maintain wildlife habitat required by these species.

Management Area 6.3

This area contains large savannah-like areas, small interspersed wooded areas, and vegetation dependent on riparian conditions. Management is intensive to produce high populations of wildlife associated with riparian habitat. Minor amounts of even-aged or uneven-aged management will occur to enhance recreation or wildlife objectives.

Management Area 6.4

Vegetation in the National Recreation Area will generally progress through the natural succession process to maturity. A limited amount of even-aged or uneven-aged management may be used to achieve recreation, wildlife, or watershed objectives.

Management Area 7

The objective of this area is to provide high-density, self-contained, forest recreation developments. Vegetation management will occur only to maintain the long-term viability, safety, and attractiveness of the area.

Uneven-aged management will be the predominant technique used to achieve this objective.

Management Area 8

These prescriptions cover management of special areas on the Allegheny National Forest. In the Kane Experimental Forest, each research project will specify the silvicultural system and cutting methods to be used. In the rest of the areas the only cutting which may occur is salvage or individual tree cutting to ensure user safety.

Management Area 9

This area emphasizes minimal management of or investment in surface resources. The only timber harvesting which will occur is salvage necessary to protect adjacent land from insect or disease epidemics or from the threat of fire.

Rationale for Prescriptions for Each Timber Type

The following references contain the scientific rationale for choosing and developing the specific prescriptions we included for each timber type:

Burns, Russell M., Silvicultural Systems for the Major Forest Types of the United States, Agricultural Handbook #445, Washington, D.C., U.S. Department of Agriculture, Forest Service, 1983, (191 pages).

Marquis, David A., Richard L. Ernst, and Susan L. Stout 1984 Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies USDA, For. Serv. Gen. Tech. Rpt. NE-96, 90 p.

Forest Service, Final Environmental Impact Statement for Eastern Region, Milwaukee, WI, U.S. Department of Agriculture, Forest Service, 1983. See the following timber type discussion in Appendix D:

Aspen	Page D-15
Cherry, Maple	Page D-49
Northern Hardwoods	Page D-108
Oak, Hickory	Page D-143
Red Pine	Page D-166
Eastern White Pine, Hemlock	Page D-74

The following is a brief discussion of the rationale for harvesting methods by timber type. It briefly summarizes information presented in the Eastern Region EIS shown above and includes local information.

Aspen

Aspen is a minor timber type on the Allegheny National Forest, occupying less than 2 percent of the total forested land area. It grows on a diversity of soils. Poor-quality, slow-growing trees are found on dry soils, rock outcrops, and poorly-drained mineral soils; while high-quality, fast-growing aspen grows on deep, well drained soils.

Principal components of this type are quaking aspen and bigtooth aspen. Common associates on this Forest are black cherry, red maple, yellow birch, sweet birch, beech, hemlock, red oak, white oak, and scarlet oak. These associates eventually dominate the stand on better sites.

Despite abundant seed production, aspen reproduces most commonly from adventitious root sprouts (suckers). Aspen suckering is suppressed by auxin transported from growing shoots. The parent stems must be killed by cutting, bulldozing, or fire to relieve this apical dominance and allow suckering to occur.

Even-aged management using clearcutting is the optimum method for maintaining aspen due to its intolerance for shade and its physiological requirements for suckering. Harvesting practices usually consist of commercial cutting or non-commercial cutting or bulldozing to benefit wildlife. Single tree or group selection will discriminate against aspen. Both seedlings and suckers are intolerant of shade and can endure little suppression. Natural thinning in dense young stands is rapid, and trees that fall below the canopy stop growing and die within a few years.

Aspen is not an important timber producing species on the Allegheny National Forest. Its pathological rotation age seldom exceeds 60 years, so few opportunities exist to grow aspen sawtimber, except on the very best sites. However, pulpwood is the only marketable product for aspen on this Forest, and this market is limited and often non-existing. Consequently, our objective for maintaining aspen relates mainly to wildlife and maintaining vegetative diversity on the Forest.

The aspen type is particularly good habitat for wildlife associated with forest margins and openings, such as white-tailed deer, ruffed grouse, woodcock, snowshoe hare, and a large number of songbirds. A diversity of aspen age classes, along with intermixed conifer stands, provides the best wildlife habitat. Aspen is predominantly dioecious, and the male flower buds are important winter food for grouse. For increased grouse production, clearcuts should be no larger than 10 acres.

Cherry, Maple, (Allegheny hardwoods)

The cherry-maple forest type covers about 12 million acres in the Allegheny Plateau and Allegheny Mountain sections of New York, Pennsylvania, Maryland, and West Virginia. The Forest lies in the heart of this area. Nearly all the world's supply of cherry lumber for furniture and veneer comes from the Allegheny hardwood forest type, as well as a substantial proportion of fine ash and maple sawtimber.

The cherry-maple or Allegheny hardwood forest type covers 53 percent of the Forest. It consists primarily of black cherry, red maple, sugar maple, and white ash with American beech, eastern hemlock, yellow birch, sweet birch, yellow poplar, and cucumbertree as common associates. Black cherry and the maples usually dominate these stands on the Forest.

Allegheny hardwoods represent an early-successional to mid-successional stage that ultimately leads to a climax forest dominated by beech, hemlock, and sugar maple if left undisturbed for a long period. Even-aged management best satisfies the reproduction and growth requirements of the high value intolerant species. Single tree selection favors the tolerant, lower valued species. Group selection favors more intolerants than does individual tree selection, but it still yields substantially fewer intolerants than does even-aged management. In even-aged management of Allegheny hardwood stands, thinnings play an important role in increasing sawtimber production and stand value.

When using even-aged management, we rely on natural regeneration to reestablish nearly all cherry-maple stands. Clearcutting is normally used where adequate advanced seedlings are already present beneath the canopy. Where advanced seedlings are not present, the shelterwood method is used. We will generally use the shelterwood method on 90 percent of the acres regenerated and clearcutting on the

remaining 10 percent. The shelterwood removal cut takes place only if there is adequate advanced regeneration following the shelterwood seed cut.

Because Allegheny hardwoods contain species that span the full range of shade tolerance and growth rates, stands usually have a complex structure. Black cherry and yellow poplar usually outgrow and eventually overtop all other species. Sugar maple, beech, and hemlock generally grow slower than their associates, but being shade tolerant, they survive when overtopped, and often form a distinctive lower canopy and diameter class. Timber rotation ages differ widely among species because of the large differences in growth rates. Stocking and yield also vary considerably, depending on species composition.

White-tailed deer cause extensive damage by feeding on Allegheny hardwood seedlings. The choice of silvicultural systems in Allegheny hardwoods would be wider were it not for the unusually high deer damage to regeneration on this Forest. Only even-aged methods that provide abundant sunlight for seedlings to grow quickly out of reach of deer are practical. In many cases it is still necessary to apply fertilizer so the leader on the main stem grows above deer browse height within one or two growing seasons. Where management objectives call for maximizing high-quality timber production or for maximizing habitat for such wildlife as deer, grouse, rabbits or hares, the even-aged silvicultural system provides the optimum response.

Northern hardwoods

The Northern hardwood forest in the northeastern United States, covering nearly 15 million acres, contains primarily sugar maple, American beech, and yellow birch. Species composition depends on stand age, site characteristics, geographic region, and past land use. The Northern hardwood type covers approximately 16 percent of the Allegheny National Forest. The sugar maple, beech, and birch occur in various proportions in individual stands and are commonly associated with red maple, white ash, eastern hemlock, sweet birch, yellow poplar, cucumbertree, and black cherry.

Species in this type differ in shade tolerance, longevity, and growth rate. Yellow birch is intermediate in tolerance and growth rate. White ash and red maple are also intermediate in shade tolerance but have moderately fast growth rates. Sugar maple, beech, and hemlock are shade tolerant, long-lived

species. Sugar maple and beech have moderately slow growth rates, while hemlock grows rapidly in diameter, though not in height. Ground vegetation (ferns and grass) and tolerant small trees and shrubs (such as striped maple and eastern hophornbeam) affect silvicultural procedures.

The highly shade-tolerant beech and sugar maple are the most common tree species in the understory of Northern hardwood stands on well-drained sites. Hemlock is more commonly found on the wet sites. These species and other long-lived tolerant species, when established, can respond to release after long periods of suppression. Yellow and sweet birches need overhead light and seedbeds of moist humus or mineral soil for optimum early establishment and development. Birches must become dominant early in life if they are to survive to maturity.

All important commercial species in this type characteristically reproduce from seed, and some also reproduce by vegetative means. Reforestation normally occurs through natural regeneration and relies heavily on adequate advance regeneration. White-tailed deer cause extensive damage by feeding on Northern hardwood seedlings.

Choice of silvicultural systems and harvest methods would be wider were it not for the unusually high deer browsing which occurs on this Forest. Since tolerant trees do not respond well to fertilization, fencing many times is required to reduce browsing damage. Even then it is important that the trees grow above browse height as quickly as possible. Even-aged management provides a better seedling growth response than uneven-aged management, thus allowing seedlings to grow above browse height sooner. Individual tree selection favors the tolerant beech, sugar maple and hemlock, while group selection will provide some higher valued black cherry. Shelterwood cuttings produce rich mixtures of hardwoods, including black cherry, red maple, white ash, and yellow poplar. Clearcutting in this type is only done when adequate advanced reproduction is present in the understory.

Oak-Hickory

The oak-hickory forest type occurs on about 18 percent of the Allegheny National Forest. It is found mainly along the river corridors and their major tributaries. White oak, northern red oak, and black oak are found throughout this type on the better sites. Other common oaks on dry sites are scarlet oak and chestnut oak. Shagbark and bitternut hickories are

consistent but minor components of the type. Other species occuring in the oak-hickory type are yellow poplar, white ash, red maple, sugar maple, black gum, and black cherry. On suitable sites, eastern white pine and eastern hemlock may also be present.

Oaks and hickories produce large seed crops at two to ten year intervals with great variation among species. Acorn production differs greatly from year to year, species to species, and tree to tree within the same species and forest stand. In some years the seed crop of some species fails completely. Most of the time animals, birds, and insects eat a large portion of the acorns and nuts.

Acorns and nuts are dispersed primarily by gravity, but squirrels, mice, and voles are also important dispersal agents as they bury them in their food caches.

Even-aged management provides the best response where the management objective is to perpetuate the intolerant oaks and hickories. It also provides the best seedling growth response, so trees can exceed browse height as soon as possible. Clearcutting and shelterwood cutting are the two regeneration harvest methods most often used in the oak-hickory type. Both methods depend on the presence or development of advanced oak reproduction and on stump sprouts. The species composition of the advanced regeneration is critical, for if Northern hardwoods or the cherry-maple type dominate, the new stand may convert to these types. Research is underway to develop economical and effective methods for retaining oak stands. Thinnings are an integral part of maximizing sawtimber production and value on the better sites.

The single tree selection system favors more tolerant species, particularly Northern hardwoods, and reduces the oak composition, particularly those species which are intolerant. Group selection successfully maintains the oak-hickory type where deer populations are low or where fencing successfully eliminates deer browsing. Inital reproduction establishment and species composition will be the same as clearcutting in openings of 0.1 to 0.25 acres. Oaks will be present only to the extent they were present as large, advanced reproduction or as stump sprouts. Reproduction growth will be retarded near the opening edges; maximum growth occurs in the central part of the opening not influenced by the surrounding stand.

The oak-hickory type provides habitat and mast for numerous wildlife species. Creating and maintaining diverse vegetation is the key to providing habitat for the greatest number of wildlife species.

Red Pine

Red pine is not native to the Allegheny National Forest, but planted stands comprise a large portion of the conifer type that occurs on 4 percent of the Forest. Plantations vary from stands of pure red pine to stands where red pine is the major species with varying amounts of native species and/or one or more species of planted white spruce, Norway spruce, and larch.

Since red pine is intolerant, even-aged silvicultural systems provide the optimal growth response. Clearcutting the mature stand and planting a new stand will be used where the management objective is to perpetuate the red pine type.

Red pine is a long-lived tree and grows up to age 200 or more. Over half of the total yield is removed in periodic thinnings, beginning when the stand is approximately 30 years old. The initial planting density, timing of thinnings, and stand density left after thinning greatly affect tree diameter growth.

Even-aged seedling stands provide a relatively open area with a large variety of pioneer plant species and good edge habitat for about a decade. Dense sapling stands provide cover for many species of wildlife.

Eastern White Pine and Eastern Hemlock

Eastern white pine and eastern hemlock are the only native conifer species found in any abundance on the Forest. (There are a few scattered pitch pine trees - the only other native species found here). White pine and hemlock occasionally occur in small pure stands, but most often occur in mixtures with each other or with hardwood species.

White pine grows on many sites: from moist stream bottoms or wet soils to ridgetops or dry soils. The soil requirements for eastern hemlock are not exacting but are usually characterized as moist to very moist but with good drainage.

Hemlock responds well to release. Often seedlings with a history of suppression and release may grow better than those that were free to grow from the start. Hemlock can survive a suppression period ranging from 25 to about 200 years. Reforestation is by natural regeneration.

Growth characteristics of white pine indicate that it can be managed best under even-aged stand conditions, though there is considerable leeway in choosing regeneration methods. White pine has been naturally regenerated in the northeast by clearcutting in blocks and strips, and by seed tree, shelterwood, and group selection methods. Single tree selection cutting has usually not proven satisfactory.

Abundant, established, advanced white pine regeneration can be released by cutting the remaining pine or hardwoods. Clearcutting during or just after a heavy seed crop often results in well-stocked stands on light soils. Release from competing hardwoods is often necessary several years following overstory removal.

Because of its tolerance to shade, hemlock can regenerate under low-light conditions. Deer browsing can severely affect regeneration, so fencing or lower deer populations are necessary to help ensure successful regeneration. To increase the proportion of hemlock and hasten growth of the understory hemlock in mixed stands, single tree selection can be used. This requires periodic removal of mature trees or groups of trees to increase hemlock growth. Excessive selection cutting may result in windfall. Hemlock stands are usually thinned from below leaving about 70 to 80 percent crown cover.

This type provides excellent wildlife habitat in all stages of its development. Deer use it for winter cover. Ruffed grouse, turkey, and other birds use it for cover throughout the year. Squirrels, other rodents, and many species of birds feed on the seeds.

Final Selection of Silvicultural Systems

As stated previously, we first prepared separate prescriptions for both even-aged and uneven-aged management for oak, Allegheny hardwoods, and Northern hardwoods. We then entered these prescriptions into the FORPLAN model for the appropriate management areas, together with their associated recreation and wildlife outputs and costs. Each was available to be chosen, based on its individual merit, in any of the

alternatives. For each of the five planning alternatives, the silvicultural systems and harvest methods actually chosen maximize net public benefits from the entire Forest as a unit. (Section III.D of Appendix B of the EIS contains additional information about silvicultural prescriptions).

The FORPLAN solution for each alternative, however, generally did not include any substantial amount of uneven-aged management unless indirectly constrained to do so. A long rotation constraint in even-aged management prescriptions in two of the alternatives resulted in significant acreage going to uneven-aged management.

Selection harvesting prescriptions generally produce lower present net values per acre than even-aged management prescriptions on the same analysis area. This is because selection harvesting prescriptions favor lower value timber species, are more expensive, and produce lower big game yields.

C. TIMBER STAND IMPROVEMENT PRACTICES

Precommercial Thinning

Precommercial thinning is removing trees from a stand that is not old enough for a commercial treatment. The objectives of the treatment are to control species composition, stand quality, and to improve growth rates on the preferred trees. It is an option on well-stocked Allegheny hardwood and high site index oak stands. The optimum age for completing this activity is 20 to 30 years.

Non-commercial Pulpwood Removal in Commercial Thinnings

The silvicultural prescription for intermediate cutting calls for removing both sawtimber and poletimber-size material from treated stands. As in the precommercial thinnings, this controls species composition, stand quality, and improves growth rates on the preferred trees. The growth and yield calculations built into the FORPLAN model assume we will cut all of this material. Where poor markets for the smaller material exist, we will have to cut it as a non-commercial activity following the commercial sale.

The publication entitled "Silvicultural Guidelines for Allegheny Hardwoods and Oak," discussed above in the section on harvesting practices, provides additional information on both of these practices.

D. REGENERATION PRACTICES

Planting

Planting is placing seedlings, containerized stock, transplants, or cuttings in the ground to establish a forest stand. The primary reason for planting are 1) to establish trees in an area where natural regeneration has failed or is not attainable and 2) to bring about a conversion of forest types from hardwoods to conifers. In failed clearcuts, the species most often planted will be hardwoods that are best suited to the site conditions. The 2400 section of the Forest-wide Standards and Guidelines in the Forest Plan contains additional detail on planting.

Fencing

Fencing involves the construction, maintenance, and eventual removal of protective fencing around a regeneration area to protect natural or artifically established seedlings from animal damage, particularly overbrowsing by deer. We usually decide to fence an area after we find post-harvest seedling or sapling stocking levels do not meet the minimum requirements identified for successful regeneration of harvest areas. When we do not have these minimum stocking levels, there is a good chance that deer browsing on the few seedlings which do exist will cause the clearcut to fail to regenerate. The Forest uses three types of fence: woven wire, small mesh nylon fence, and five-strand electric fence. We install woven wire fence using a bulldozer and a fence stretcher, and we install nylon fences and electric fences using only manual labor. We use fencing most often in the oak and northern hardwood types since neither of these will respond adequately to fertilization.

Fertilization

Fertilization is the application of nutrients to seedlings or saplings in recently-harvested stands or to individual trees. The Allegheny National Forest uses fertilizer to stimulate vigorous seedling/sapling tree growth, thereby limiting the length of time they remain vulnerable to browsing by wildlife species, particularly deer. We complete individual tree fertilization manually in areas where we have planted seedling stock to establish a stand. Where we are relying on natural regeneration to become the new stand, we apply fertilizer to the whole stand using a helicopter. Only shade tolerant species such as black cherry, white ash, and yellow poplar respond well to fertilization, so generally we will fertilize only the Allegheny hardwood timber type.

Site Preparation for Natural Regeneration

This activity involves treating the understory vegetation and undesirable tree stems remaining after a final harvest or shelterwood cut. On the Allegheny National Forest, we generally complete this by cutting down (using a chainsaw) all stems larger than two inches in diameter which have poor form, defects, or are not the species we desire in the new stand. These stems, if left in place, will use valuable growing space, nutrients, and water which the desirable seedlings and saplings will need.

Herbicide Treatment of Undesirable Understory Vegetation

The interference of understory vegetation with the establishment and growth of tree seedlings has been recognized as a problem on the ANF for at least a decade. As the forest approaches maturity, the need for a solution becomes critical.

Research projects have been conducted by the Forestry Sciences Laboratory (NEFES) in an effort to find solutions to this problem. Some techniques have been applied on a semi-commercial basis on the Forest and are in commercial use by other public agencies and companies in the area.

Background

When hayscented and New York fern are present beneath the overstory of a stand to be harvested, they often cause regeneration failure. Such stands often have 50 to 90 percent fewer desirable seedlings. Growth of these seedlings is poor, and seedlings do not usually grow above the herbaceous cover before they die. Striped maple and beech suckers also occur in the understory of many hardwood stands. When these species are abundant before cutting, they tend to become the dominant vegetation after cutting, crowding out desirable species of reproduction. When ground covers of fern or understories of striped maple or beech are excessive, as described in the Allegheny Hardwood Handbook, action should be taken to reduce the amounts of these plants before cutting so that satisfactory regeneration of the stand can be obtained.

We estimate that half of the Forest contains restrictive quantities of fern, striped maple, and/or beech suckers. On these areas, it is not possible to regenerate the Forest with either even-aged or uneven-aged silvicultural prescriptions. Vertical diversity is lacking in the

understory. This means there is less food and less cover for wildlife species.

The current situation results from a combination of factors. Selective browsing by large deer herds has drastically reduced or eliminated tree seedlings on many sites. Since fern, striped maple, and beech are not preferred deer food, they often survive and dominate the understory. Once established, these weed species are able to survive and interfere with reproduction of desirable tree species for an indefinite period of time. (For example, orchard stands and savannahs have been dominated by herbaceous plants for nearly 60 years). Reductions in deer population, shading of overstory, and similar ecological factors do not seem to reduce them enough to permit seedling regeneration. Some form of direct control of the undesirable plants is required. Control measures must be adopted during the 5 to 10 year period prior to harvest cutting in even-aged stands and immediately prior to each periodic harvest cutting in uneven-aged stands.

Alternatives Considered

Apply Herbicide

Five herbicides (bromacil, glyphosate, picloram, simazine, and hexazinone) have been tested by the Forestry Sciences Laboratory. Glyphosate (N-phosphonomethyl glycine), marked as Round-up herbicide by Monsanto Agricultural Products, St. Louis, MO, has been evaluated as the most economical herbicide tested that met the control criteria.

Mechanical Control

Ferns can be controlled mechanically by plowing during the growing season or by mowing two to three times per year for two to three successive years. Cutting of beech and striped maple is not effective because these species resprout rapidly. Small striped maple (3 feet tall) can be controlled by hand weeding.

Prescribed Fire

Ferns, striped maple, and beech can also be controlled with fire; however, two to three burns in successive years are needed to produce adequate control. A single burn does not reduce the cover of any of these plants and may actually stimulate it.

Fire use, however, has several limitations on the Allegheny Plateau. First, the number of burning days on the Allegheny Plateau are limited. During the 10-year period from 1960 to 1969, the ANF averaged only 8.5 days/year when wildfires occurred. During the same period, forests where prescribed burning is used averaged 49.8 to 97.3 days/year when fire occurred. Second, the Allegheny hardwood forest, the major timber type, does not develop a fuel accumulation large enough to sustain fires in each of three successive years. Thus, despite the potential effectiveness of fire as a weed control tool, it has limited value for a large scale program like understory control.

No Understory Control

As timber stands attain maturity, regeneration through clearcutting, shelterwood cutting, or selection cutting would be prescribed where understory conditions would permit such action. Where fern, striped maple, and/or beech dominated the floor beneath mature stands, regeneration would be deferred indefinitely.

Effects of Implementation

Effectiveness

The effectiveness of Roundup for control of a variety of weeds of agricultural crops and the specific weeds found in Allegheny hardwood forests is well documented in the literature. Furthermore, Roundup has been used operationally in an herbicide-shelterwood sequence by Hammermill Paper Company, Texasgulf, Inc., the Pennsylvania Department of Environmental Resources, and the Pennsylvania Game Commission for four years. These companies and agencies have made a substantial financial investment in equipment to carry out this work. Moreover, Roundup has been approved for forestry use by the Pennsylvania Department of Agriculture and the U.S. Environmental Protection Agency.

Mechanical methods are effective in controlling ferns where plowing and mowing can be done. But, these are impractical techniques in forest situations. Striped maple can be controlled mechanically by repeated treatment; mechanical techniques are ineffective in controlling beech.

Fire is an ineffective weed control measure in the Allegheny hardwood forest for the reasons given above.

Water

The possibility of Roundup moving through the soil profile or running off the soil surface has been addressed in literature. Extensive studies using a variety of soils have shown that Roundup is bound tightly to soil, has a low propensity for runoff, and does not leach through the soil profile. These studies used 14C-labeled Roundup permitting detection of very minute quantities of Roundup.

Mechanical understory control measures being considered will have no measurable effect on water quality.

Where no control measures are employed, there will be no effect on water quality.

Soils and Soil Micro-Organisms

Roundup is rapidly and completely degradable to CO2 in both soils and water. Studies have utilized a range of soils and geographic areas. Degradation is carried out chiefly by micro-organisms. Research shows that a wide variety of microflora are capable of degrading Roundup. Furthermore, experiments with both treated and untreated soils demonstrate that Roundup has no adverse effect on the overall microflora population.

Handweeding striped maple will have no significant impact on soils or soil micro-organisms.

Mowing may cause negligible soil compaction.

Public Acceptance

There has been widespread public concern about the use of herbicides as a forest management tool for the past decade. Regardless of the credentials of a particular herbicide, the phrase "chemical weed control" may generate public opposition. However, Roundup has been one of the most widely-used herbicides in agriculture during the past decade, where it has been used to control weeds among food crops, and thus has not created a great deal of public concern. Mechanical control measures or simply making no treatment are not likely to cause public concern.

Safety and Health

The graph on the succeeding page compares the toxicity of glyphosate to other selected herbicides and to aspirin and table salt. Glyphosate is less toxic than aspirin or table salt and is registered for use on agricultural crop lands.

Roundup is classified as only slightly toxic by oral ingestion with an acute LD_{50} (lethal dose to 50 percent of the population when given as a single dose) to rats of 4,320 mg/kg of body weight (indicates low toxicity), and an oral LD_{50} of 4,900 mg/kg of body weight (indicates low toxicity). Roundup is classified as practically nontoxic by skin contact since rabbits survived single dermal dosages greater than 7,940 mg/kg of body weight.

United States
Department of
Agriculture

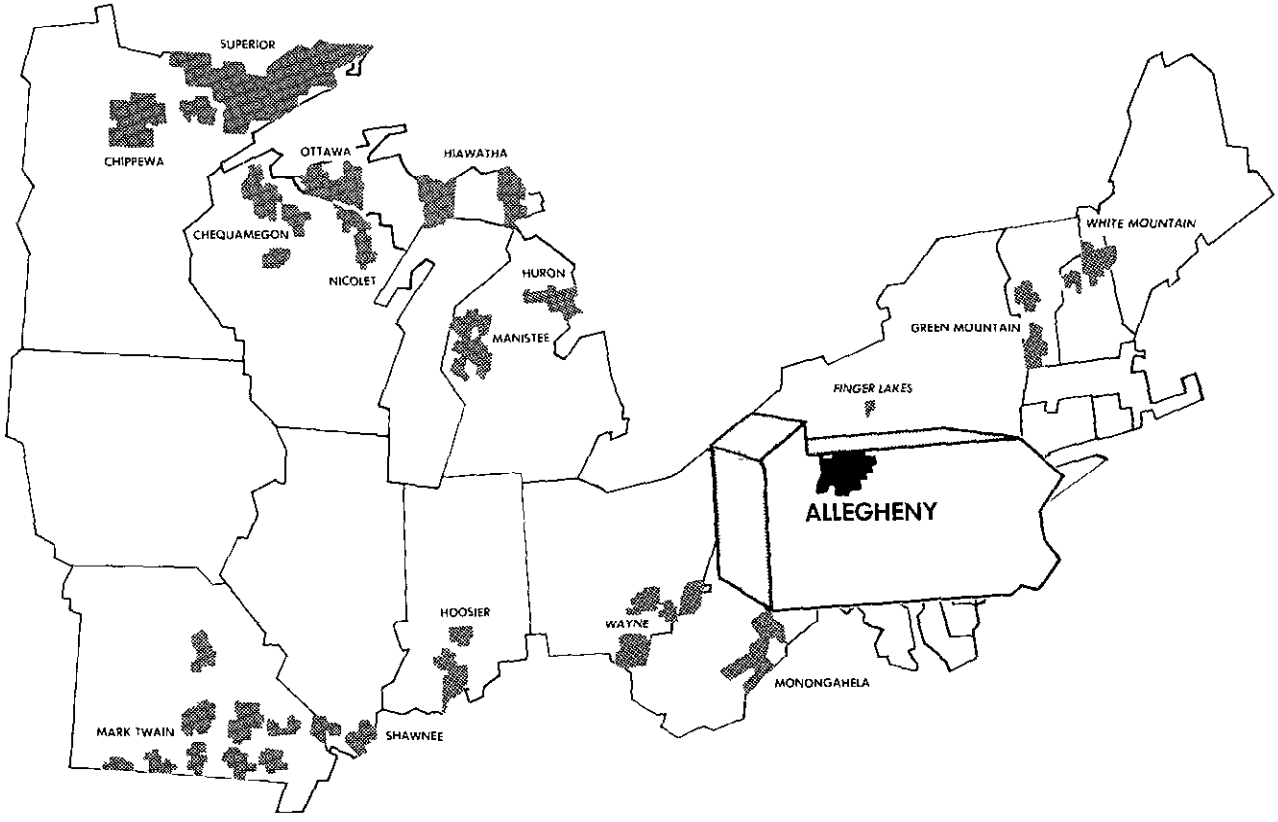
Forest
Service

**Eastern
Region**

Record of Decision

Final Environmental Impact Statement Land and Resource Management Plan

ALLEGHENY NATIONAL FOREST



RECORD OF DECISION
for
USDA, FOREST SERVICE

Final Environmental Impact Statement
Allegheny National Forest
Land and Resource Management Plan

Elk, Forest, McKean, and Warren Counties, Pennsylvania

ALLEGHENY NATIONAL FOREST
RECORD OF DECISION
FOREST PLAN

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RECORD OF DECISION

USDA, Forest Service, Final Environmental Impact Statement, Allegheny National Forest Land and Resource Management Plan, Elk, Forest, McKean, and Warren Counties, Pennsylvania.

I. INTRODUCTION

This Record of Decision approves the Allegheny National Forest Land and Resource Management Plan (Forest Plan) and also gives reasons for the alternative selected as the Forest Plan. Legal references are incorporated in Part XI of this document.

A Forest Plan for each National Forest is required by the rules implementing the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA). The purpose of the Forest Plan is to provide direction for multiple use and the sustained yield of goods and services from National Forest System lands in an environmentally sound manner.

The Plan covers management actions for ten years only. The Plan will be revised in ten years, no later than fifteen years. The Plan can be revised sooner, if conditions or demands change significantly.

The Forest Plan has been prepared following rules established for National Forest System Land and Resource Management Planning (36 CFR Part 219). These rules were published in 47FR 43026 on September 30, 1982.

The Forest Plan is a companion document to the Final Environmental Impact Statement (Final EIS). The Final EIS has been prepared following Council of Environmental Quality rules (40 CFR Part 1500) implementing the National Environmental Policy Act (NEPA).

The Final EIS describes the range of alternatives considered and discloses their significant environmental effects. Each of these alternatives could be the basis of a Forest Plan. One alternative has been further developed as the Allegheny National Forest Land and Resource Management Plan.

Planning records contain the detailed information and decisions used in developing the Forest Plan and Final EIS. These records are available for review at the Forest Supervisor's Office: **ALLEGHENY NATIONAL FOREST, 222 LIBERTY STREET, P.O. BOX 847, WARREN, PA. 16365, (814) 723-5150.**

II. MAJOR FEATURES OF THE FOREST

The Allegheny National Forest sits in the rugged plateau country of northwestern Pennsylvania. Many creeks and streams cut deeply into the plateau, creating a rolling and sometimes steep topography with a 1,300 foot range of elevations.

Such a setting offers many opportunities for recreation. Trails for the hiker, cross-country skier and snowmobiler wind for many miles through the forest. Four beaches, six boat launches, 18 campgrounds, three scenic overlooks, and nine picnic areas satisfy those who prefer developed facilities. Many recreation areas are near the Allegheny Reservoir, a 27-mile lake on the upper Allegheny River, impounded by the Kinzua Dam.

Six of the 10 campgrounds located on the shores of the Allegheny Reservoir can be reached only by boat or on foot. Two scenic overlooks offer magnificent views of the Allegheny Reservoir from atop dramatic formations of bedrock. A third overlook, located near the town of Tidioute, offers a beautiful view of the Allegheny River Valley.

The Tionesta Scenic and Research Natural Areas and Hearts Content Scenic Area feature some of the oldest and largest tracts of virgin beech-hemlock forest in the eastern United States. These three areas offer the public a rare opportunity to view unique ecosystems in a quiet, undisturbed setting.

The Forest also features the Kane Experimental Forest. This 1650 acre tract is administered by the Northeastern Forest Experimental Station as an area of forest research. This type of natural laboratory is essential to scientists if they are to develop new and better forest management practices.

Nearly 10,000 acres of Wilderness, nationally designated in 1984, receives protection on the Allegheny. The largest area is the Hickory Creek Wilderness (9,337 acres), complemented by seven Allegheny River Islands.

Also designated in 1984, the 23,100 acres of the Allegheny National Recreation Area are preserved and protected under the Pennsylvania Wilderness Act. This designation ensures the integrity of natural, scenic, historic, and other values within the area, as well as providing recreation opportunities.

The watersheds of the Allegheny National Forest provide high quality water supplies in amounts that exceed the needs of local communities. Several reservoirs and over 500 miles of streams offer outstanding fishing opportunities, with 71 species available. The State record Northern Pike (33 pounds, 8 ounces, 45-3/4 inches) and Walleye (17 pounds, 9 ounces, 36-1/2 inches) were taken from the Allegheny Reservoir in 1980.

More than 300 species of mammals, including game species such as the white-tailed deer and black bear, provide excellent hunting, as well as opportunities for photographing and watching animals in their natural habitat. Forest populations also include raccoon, gray squirrel, turkey, ruffed grouse, woodcock, and snowshoe hare, red and gray fox, beaver, mink and muskrat. Hundreds of songbirds, along with woodpeckers, hawks, herons, and owls enjoy the woodlands. Bald eagles have been spotted in the Kinzua Dam area.

Allegheny hardwood stands represent the most valuable and widespread timber type on the Forest. This type includes black cherry, red maple, yellow poplar, white ash and sugar maple. The exceptional quality of the black cherry found here makes it highly valued throughout the world for fine furniture and veneers. In 1983, over 61 million board feet of timber were harvested from the Allegheny National Forest.

The Allegheny lies in the heart of Pennsylvania's oil and gas region, only 40 miles from the site of the first oil well in the United States, . In 1981, about 17 percent of the State's total crude oil production came from mineral rights owned by private individuals within the Forest boundary. Because of its high paraffin content, Pennsylvania crude is one of the best lubricating oils in the world.

III. THE FUTURE FOREST

The Land and Resource Management Plan (Forest Plan) is the most useful management tool the Allegheny National Forest has ever had. The Forest Plan will help obtain the goal of better integrated resource, multiple-use management of the Allegheny National Forest.

The Allegheny National Forest (ANF) now has one integrated management plan. In the past, activities were planned and implemented for individual resources. In the future, the Allegheny National Forest will use Forest Plan goals and objectives in an integrated manner to achieve a balance in multiple use.

Implementation of the Forest Plan will create changes in the current management of the Allegheny. Developed campgrounds and other recreation areas will increase through a combination of private and public investments. Camping facilities will be expanded at Willow Bay, and a new motel and restaurant complex will be developed near Kinzua Beach. Small-scale campgrounds and boat launches will be constructed along the major river corridors.

Large areas having limited road access will provide for recreation activities such as hiking, hunting, fishing, berry picking, and cross-country skiing. Small, cost-efficient campgrounds will be constructed. New hiking and skiing trails will be constructed primarily in areas with limited road access and near campgrounds. The remainder of the Forest will consist of roaded areas managed to provide additional opportunities for motorized recreation activities as well as hiking, hunting, fishing, and skiing. Motorized activities include driving for pleasure, auto camping, and off-road vehicle riding.

Over the decade, timber sales will be increased above current cutting levels, but will remain about the same as that allowed under the 1975 Forest Plan (93 MMBF/Year). The Plan will emphasize financial returns from production of high-quality hardwood sawtimber. During the next ten years, sawtimber production will increase 45 percent above the current level. Even-aged silviculture will dominate, and trees will be harvested at a range of ages. Oak stands will not be cut unless they can be regenerated back to oak. The only exception will be to salvage trees killed by insects or disease.

Herbicides will be used to control unwanted understory vegetation. Forest Service policy is to minimize the use of herbicides.

Wildlife management practices will complement timber practices and lead to increased deer, turkey, and grouse hunting opportunities. Seven thousand acres will be managed intensively for grouse. Letting timber grow older before cutting it and restricting road access will be stressed in several management areas. This should increase mast production (acorns, beechnuts, black cherry seeds) and promote development of more turkey habitat across the Forest. Endangered and threatened wildlife species as well as other species of concern will receive protection and habitat enhancement. Special habitats, such as conifer

stands and openings containing fruit-producing shrubs, will be arranged to benefit small game, non-game and wildlife indicator species. Fishery habitat will be improved to a level slightly higher than what is currently provided.

On the Allegheny National Forest there are approximately 10,000 active oil and gas wells. During the period 1980-1982, an average of 700 new wells were drilled each year.

Nearly 10,000 acres of the Forest will be managed as wilderness, and 23,100 acres will be managed as the Allegheny National Recreation Area. Four areas will be proposed as candidate Research Natural Areas. They are:

Muzette Tract - (Virgin White Pine and Hemlock)
Crulls Island - (Virgin Riverine Forest)
Thompson Island - (Virgin Riverine Forest)
Sheffield Compartment 126 - (Black Cherry Type)

The planning process strives to identify and resolve issues which concern the public. This plan, developed after careful study of the alternatives, seeks to resolve the issues and concerns related to land and resource management on the Allegheny National Forest.

IV. DECISION

This decision approves the Forest Plan that is identified as Alternative D in the Final EIS. Alternative D is further explained in the companion document, the Allegheny National Forest Land and Resource Management Plan.

This decision is controlled and guided by 36 CFR Part 219.1. This regulation requires that a Forest Plan "shall provide for multiple use and sustained yield of goods and services from the National Forest System in a way that maximizes long-term net public benefits in an environmentally sound manner".

A determination of net public benefit cannot be reduced to any kind of single index for comparison of the alternatives in making the decision. All of the information on benefits, costs, public issues, comments on the Draft EIS, and other environmental effects were considered together. Responsiveness to public issues and comments was given particular consideration in the decision making process.

Management direction in the form of goals, objectives, management practices, and standards and guidelines will be followed while working towards the future desired conditions of each management area. The Forest Plan Management Area Map shows where these conditions are to be created.

The decision to approve Alternative D narrows the scope of future environmental analyses to be performed for actions arising from the Forest Plan. Future environmental analyses and documents will tier to the Plan's direction and the Final EIS. The Forest Plan and Final EIS are treated as combined documents for purposes of NEPA disclosure and tiering.

V. EXCEPTIONS TO THE DECISION

In 1978, Public Law 95-625 (an amendment to the Federal Wild and Scenic Rivers Act - PL 90-542) identified the Allegheny River from Kinzua Dam to East Brady as a study river. The Forest Service is currently in the process of preparing a legislative EIS for this study river. The draft EIS should be available late in 1986. Following public review, a Final EIS will be transmitted to Congress for consideration.

No decision regarding designation of parts of the Allegheny River as "Wild", "Scenic", or "Recreation" is implied in the Forest Plan. All alternatives considered, along with existing management direction, were designed to protect the river's existing resource values and preserve its eligibility. If Congress passes legislation designating the Allegheny River as a Wild and Scenic River, the Forest Plan will be amended to comply with the legislative requirements.

VI. REASONS FOR THE DECISION

This section describes the significant factors forming the basis for the decisions in the Forest Plan. These considerations were derived from the issues, concerns, and opportunities identified through the planning process, as well as from public comments on the Draft EIS and proposed Forest Plan (Appendix C of the Final EIS).

No single factor determined the decision. Rather, all factors were considered and weighed in making the decision that Alternative D comes nearest to providing maximum net public benefits in an environmentally sound manner.

RESPONSE TO MANAGEMENT PROBLEMS

One of the major reasons for selecting a proposed action is how well it responds to public issues and management concerns. Many of these issues and concerns represent conflicting viewpoints and may be interpreted differently by different people. Appendix A of the Final EIS describes how these issues and concerns were formulated into what we call "management problems". Management problems describe the conflicting ideas people have about management of the Allegheny National Forest and the outcomes desired from management

activities. These problems guided the development and evaluation of alternatives. For additional information, consult pages A-18 to A-44 of the Final EIS.

1. Providing Developed Recreation

The following public issues and management concerns were considered in determining the Forest Plan's response to providing developed recreation. Comparisons between alternatives are based upon long-term projections. Consult the Final EIS, pages 2-49 to 2-53 and C-24 to C-31 for a more detailed discussion of this management problem.

Allegheny Reservoir

Some are convinced that the reservoir can accommodate more modern campgrounds and boating facilities and still retain its scenic beauty. Others want to see no additional development and retention of the reservoir's undeveloped character. The majority of respondents supported the latter viewpoint.

The Forest Plan provides for expansion of Willow Bay Campground, development of a motel and restaurant complex adjacent to Kinzua Beach, and construction of two bank fishing trails for the handicapped over the next ten years. In addition, long term projections call for reconstruction of Dewdrop Campground in the third decade. In contrast, Alternatives A and B call for no new developments, and Alternative E has about the same amount of development as projected in the Forest Plan. Alternative C would provide for the most new development, including expansion of three campground/boat launch facilities and construction of two privately-financed resorts in the Kiasutha and Sugar Bay areas.

The Forest Plan achieves the most balanced recreation program for the Allegheny Reservoir. The proposed developments will provide additional capacity to meet expanding recreation demand, and will also correct deficiencies at existing facilities which may have discouraged some recreational use.

Alternatives A and B were not selected because they do not provide additional developed recreation opportunities. Alternatives C and E were not selected because the developments proposed under these alternatives would open up new areas of shoreline for development. Developments planned under Alternative D are located in areas currently developed

for recreation, thus preserving the existing undeveloped character of the Reservoir. The selection of Alternative D also means that less resort-oriented recreation opportunities will be provided during this planning period than possible under either Alternatives C or E.

Allegheny and Clarion Rivers and Tionesta Creek

Use studies indicate that boating and fishing on these waterways is increasing, but public access and campgrounds are limited. Some people believe more developed recreation facilities should be provided, while others wish to preserve the shoreline's undeveloped character.

The Forest Plan calls for development of two boat launches and a trailhead parking facility (with toilets) during the first decade. If Forest Plan Management Direction were to continue beyond the first decade, a total of three new campgrounds, two new boat launches, and three new trailheads (eight facilities) would be in place by the end of the fifth decade. In contrast, Alternatives B and C would provide less new development (None and six facilities, respectively), and Alternatives A and E would provide more (Nine facilities each). For more information, see Table 4-3 and the discussion on pages 4-9 to 4-11 of the Final EIS.

Currently, the public is accessing these rivers from roads and many informal boat launches. The Plan would provide safe, properly-spaced, access points containing those facilities necessary for an enjoyable outing. Trailhead parking, toilet and camping facilities would be provided to meet the needs of those individuals desiring a more primitive camping experience.

Alternative D was chosen over Alternatives B and C because their level of new development was too low. Alternative D was chosen over Alternatives A and E because these alternatives (as indicated in Figure 2-3 of the Final EIS) emphasized campground development over boat launches, and a more balanced program was desirable.

Most of the public who voiced an opinion, desired to maintain the undeveloped character of these rivers. None of the proposed developments should significantly alter the undeveloped nature of the shorelines. The natural characteristics may even be improved as some existing, informal launches and campsites are closed and restored to their former natural condition.

Public or Private Financing of Recreation Facilities

Historically, the Allegheny National Forest has used public funds to finance construction of most recreational facilities. The alternatives developed for the Allegheny National Forest propose, in varying amounts, to finance some recreational developments through private sources and some through traditional public financing. Public comment has generally opposed the use of private financing.

The Forest Plan calls for private financing of a motel and restaurant complex near Kinzua Beach during the first decade and possible development of a campground at Hopkins Farm (on the Allegheny River) sometime in the second decade. In contrast, Alternatives A and B call for no use of private financing, and Alternative E about the same amount as indicated in the Forest Plan. Alternative C proposes the greatest use of private financing including development of two resorts in the Kiasutha and Sugar Bay areas.

Alternative D was selected because it balances the need for additional developed recreation facilities against available investment opportunities. Throughout our deliberations, close consideration was given to public comments on this issue. Most of the reasons given in opposition to private financing appear to be linked to a perceived loss of control by the Forest Service. To avoid this loss, a thorough analysis will be made to determine the effects various development proposals would have on existing physical, biological, economic, and social conditions. Designating a development for private financing only means that this option will be considered during the environmental analysis. All private development will be regulated through a special use permit and each permit will contain stipulations designed to meet Forest Plan Management Direction.

Given these considerations, the Forest Service can utilize private financing without compromising Forest Plan Objectives. Public funds for new development are becoming increasingly scarce; Alternative D offers a good opportunity to test the feasibility of private financing with minimal risks. Alternatives A and B were not preferred because they offered no opportunity for using private investment. Alternative C was not selected because it called for substantial use of private investment. It is more prudent to first test private financing on a small scale before committing the Forest Service to a large program. Similarly, Alternative E was not

selected because of the large scale of the Hodge Run resort and its impact on an undeveloped portion of the shoreline.

This decision also reflects changes in our original proposal as a result of public comment. Sugar Bay resort is no longer a part of Alternative D. In its place, we have entered the proposed motel/restaurant complex discussed above. This motel/restaurant complex is smaller and less controversial than Sugar Bay resort and will be built near existing developments, thus lessening the impact on visual quality and the undeveloped shoreline. Sugar Bay resort would have opened up a new area to recreational development.

2. Providing Dispersed Recreation Opportunities

The following were considered in responding to conflicts between dispersed recreation users.

Recreation Opportunities

This problem was addressed by managing different natural resource settings for various recreation opportunities. These settings are described by the Recreation Opportunity Spectrum classes and are a part of each management area prescription.

Some individuals prefer dispersed recreation opportunities that involve the use of vehicles. They appreciate the access provided by roads built for timber harvesting and oil development. Others prefer solitude, few encounters with other forest users, and natural-appearing landscapes. The Forest Plan assigns 30,000 acres to a semi-primitive non-motorized recreation setting. This acreage will provide visitors desiring a quiet, undisturbed landscape with an estimated 296,000 Recreation Visitors Days (RVDs) of use over the next ten years, more than twice the opportunity offered in any of the other alternatives. Areas assigned to a semi-primitive non-motorized setting include the Hickory Creek Wilderness, Allegheny Islands Wilderness, and the four Management Area 6.2 areas identified on the Forest Plan Management Area Map.

Non-motorized recreation activities will also be emphasized in the Allegheny National Recreation Area (23,100 acres) and in the Clarion River/Minister Valley areas (approximately 4,000 acres in size and described on page 4-115 of the Forest Plan).

The Forest Plan provides 131,000 acres of semi-primitive, motorized setting. Such settings have a limited amount of road access, and provide a moderate opportunity for solitude while limiting encounters with other Forest users. The Plan also provides about 342,000 acres of roaded natural recreation setting. These areas usually have ample road access, and provide for more social interaction in a forest setting.

Recreation settings labeled semi-primitive generally emphasize non-motorized activities such as hiking, hunting, fishing, berry picking, and cross-country skiing. Roaded natural recreation settings include similar activities, but also include activities more dependent on road access, such as auto camping, driving for pleasure, power boating, off-road vehicle use, picnicking, and firewood gathering.

Alternative A would manage the most acreage under a semi-primitive motorized setting (296,000 acres). Alternative B is next, followed by the Forest Plan and Alternative C, which have similar levels. Alternative C would manage the most acreage under a roaded natural setting (411,000 acres). For further details, see Figure 2-5 and Table 2-11 in the Final EIS.

The mix of recreation opportunities offered in Alternative D is appropriate. It provides the most semi-primitive, non-motorized recreation opportunities, while still offering moderate amounts of semi-primitive motorized and roaded natural settings. The public demands all of these types of opportunities from the Forest's limited landbase.

Motorized and Pedestrian Trails

Concerning motorized trails, some people desire more off-road vehicle trails; while others want less. Public sentiment generally favored development of additional pedestrian trails. See pages C-32, C-33, C-36, and C-37 of the Final EIS for details.

The Forest Plan features construction of 48 miles of pedestrian trail and 156 miles of motorized trail over the next 10 years. The pedestrian trails planned are of two types: trails that connect campground areas and trails that begin and end at specified trailhead facilities. The motorized trails will be constructed either within the five intensive off-road vehicle use areas or as trails connecting these five areas. Motorized trails will use some existing roads.

If current management were to continue, the Forest Plan would construct 89 miles of pedestrian trail and 312 miles of motorized trail over the next 20 years. In contrast, Alternative E proposes the most intensive trail building program, with 142 miles of pedestrian trail and 392 miles of motorized trail planned over the next 20 years. The remaining alternatives propose less trail construction than the Forest Plan. Each was formulated to emphasize only one type of trail construction. As a result, Alternative A proposes 142 miles of pedestrian trail, while Alternatives B and C propose 313 and 235 miles, respectively, of motorized trail over the next 20 years. For additional information, see Figure 2-6 and Tables 4-5, 4-6, and 4-7 of the Final EIS.

The trail construction program presented in the Forest Plan is appropriate. The off-road vehicle mileage figures presented in Alternative D are based on the results of public involvement done while developing the 1977 Off-Road Vehicle Environmental Impact Statement. These figures were generally supported by current public comments on the Proposed Plan. New trails will also increase the use of existing and planned campground facilities.

Alternatives A, B, or C were not chosen because they emphasized only one type of trail, and the public indicated a desire for both. Alternative E was not selected because it proposed a level of trail development higher than that recommended in the 1977 Off-Road Vehicle Environmental Impact Statement, and this was not supported by public comment.

In making this decision, the Forest Service recognizes that the projected demand for these types of dispersed recreation facilities will not be met. This tradeoff appears necessary, considering divided public opinion. More or less trails could be constructed should public opinion change in the future.

3. Timber Management

The following items were considered in determining the Forest Plan's response to the timber management problem statement. All comparisons for long-term sustained yield (timber volume) are for 150 years, whereas the rest of the comparisons cover a much shorter time period, as indicated. Consult the Final EIS, pages 2-58 to 2-63, for a more detailed summary of this management problem and pages C-40 to C-55 for a summary of the public comments received. Timber management practices are also tied very closely to the wildlife discussion under Management Problem 4.

Timber Volume

Timber is a valuable economic resource on the Allegheny National Forest, especially high-value black cherry. The level of total timber volume and sawtimber volume to harvest during each decade must be defined. To satisfy some, the Forest Service would have to harvest more timber than proposed in the Forest Plan, while others feel the harvest should be lower.

The National Forest Management Act directs each National Forest to plan for a level of timber sale volume that does not decline from one decade to the next. Temporary departures are permitted if justified in specific situations. Our timber demand analysis indicates the Allegheny National Forest could double sawtimber sales immediately. Industry representatives indicate they could accommodate this additional volume without major investment. On the other hand, pulpwood supplies are expected to remain high and the market demand low.

Increasing the timber harvest volume generally means assigning more acres to timber harvesting prescriptions, particularly to even-aged management if the emphasis is on high-valued species. This requires some trade-off in recreation opportunities, particularly those related to semi-primitive dispersed recreation.

The 1975 Timber Management Plan calculated a long-term sustained yield of 137 MMBF per year and authorized an annual sale volume of 93 MMBF for the period 1976-1984. The Forest Plan proposes about the same amount, 95 MMBF of average annual sales volume for the first decade. The Plan's long-term sustained yield is also 95 MMBF per year. Historically, the Allegheny National Forest has harvested less than the authorized level. Alternative B, the current situation, proposes a harvest level of 62 MMBF per year.

The Forest Plan's total annual sale volume is second only to that in Alternative C with 103 MMBF. Compared to the current situation, Alternative C proposes a 66 percent increase, followed by Alternative E with a 44 percent increase and Alternative A with a 21 percent reduction. Alternative B represents the Forest's current sales program of 62 MMBF. (See Figure 2-7 or Table 4-8 in the Final EIS for a display of this information.)

Concerning sawtimber production, Alternative C offers the highest sawtimber volume in Decade 1. At 54 MMBF/year, Alternative C is 40 percent higher than the next highest harvest level which is in Alternative D. By the third decade, however, Alternatives D and E offer sawtimber volumes which equal or surpass those in Alternative C. Alternative A offers the lowest sawtimber volume. (For a display of this information, see Figure 2-8 and Table 4-8 in the Final EIS.)

Pulpwood production was not a factor in making the decision. Market values for pulpwood are low and pulpwood cutting is done mainly as a by-product of silvicultural prescriptions which emphasize sawtimber production. (For more information about the role of pulpwood cutting, see Appendix D of the Forest Plan and the response to comment 49 on page C-54 of the Final EIS.)

The Forest Plan provides the most balanced timber program, considering the demands for other resource uses. It responds to industry and consumer demands for increased production of high-quality sawtimber. This means better utilization of existing mill capacities and additional employment opportunities.

Alternatives C, D, and E all reflect higher sawtimber production and are likely candidates to satisfy this consumer need for increased high-quality sawtimber. There are several indicators which measure the differing emphasis on quality sawtimber production among these alternatives. The three best indicators are 1) the difference between direct costs and direct benefits of the timber element (see Table B-53 in Appendix B of the Final EIS); 2) the returns to the U.S. Treasury (see Table B-64 in Appendix B); and 3) payments to counties (see Table 2-17 in the Final EIS). Alternative C has the highest values in these three areas, followed by Alternative D and then Alternative E.

Though Alternative C provides the highest timber benefits, Alternative D was preferred because of the higher level it provides of wildlife habitat improvement work, the mix of recreation opportunities, and the level of trail construction. Alternative D was selected over Alternative E because it has a stronger emphasis on quality sawtimber production. The difference between timber management benefits and costs in Alternative D is 38 percent higher than for Alternative E.

Timber sales may be used in place of other management practices to meet wildlife and dispersed recreation objectives. Accomplishing wildlife and recreation objectives, such as creating wildlife habitat and visual diversity, may lead to an occasional below cost sale, but these occurrences will remain uncommon on the Allegheny National Forest. Below cost timber sales will be considered only when the expected total resource benefits exceed project costs and the timber sale represents the most cost-efficient treatment for accomplishing the area's resource objectives.

Vegetative Treatments

The public expressed concern over the use of clearcutting, selection cutting, and herbicide use on the Allegheny National Forest. Although some supported more clearcutting, others supported more selection cutting. Many expressed concern over the safety of herbicides. The public is also firmly against any oak conversion.

The Forest Service recognizes that clearcutting is controversial. Clearcuts and shelterwood cuts are the primary management practices associated with even-aged management. In the planning documents, these practices are discussed under the heading of "final harvest" cuts. Important public concerns are the size, shape, and appearance of individual cutting units; and the total acreage scheduled for final harvest across the Forest. Management area standards and guidelines in the Forest Plan are consistent with those in the Regional Guide for the Eastern Region, and establish a maximum 40-acre size limit on clearcut openings. Historically, clearcuts on the Allegheny have averaged between 20-25 acres. The Forest Service will continue to stay within this 40-acre limitation and the small average size of clearcuts will continue.

Visual concerns are addressed in the Forest Plan, and we will maintain the visual quality objectives (VQO) stated for each management area. In each alternative, final harvest cuts would be used to remove an area's overstory only after abundant seedlings are present, which further reduces the visual impact of the final harvest cuts.

The acreage of final harvest was also a concern. The Forest Plan calls for harvesting 3,300 acres each year during the first decade, of which 10 percent will be clearcuts and 90 percent shelterwood cuts. Final harvest in the Forest Plan is at the middle of the range established by the other alternatives, and slightly more (200 acres) than that proposed in

Alternative B, the current situation. The Forest Plan level of harvest emphasizes habitat for wildlife species requiring early successional stages of vegetation, maintaining high-value shade intolerant trees on the good sites, and assuring visual variety in the Forest landscape.

Appendix D of the Forest Plan discusses the rationale behind even-aged and uneven-aged silviculture. Chapters 2 and 4 of the Final EIS discuss how these two silvicultural systems will be used to create wildlife habitat, visual, and vegetative diversity.

As indicated above, the public opposed any oak conversion. Under current management practices, when an oak area is cut on the Allegheny National Forest, it generally does not regenerate back to oak without substantial investments. The loss of mast (acorns) could be detrimental to wildlife. In the Forest Plan, oak stands will be cut only in those situations where either there is abundant advanced regeneration (creating a high probability that the oak areas can be retained) or when cuts are necessary to harvest trees killed by insects and disease. In the meantime, assistance has been requested from the Northeastern Forest Experimental Station in developing new feasible methods for regenerating oak.

Alternative D calls for the use of herbicides to control understory vegetation, as do all of the other alternatives except Alternative B. Estimates are that up to 50 percent of the Allegheny is covered with dense understories of striped maple, fern, and grass. This type of vegetation competes directly with the tree seedling for light, nutrients, and water. The ferns also secrete chemicals which inhibit tree seedling germination and growth.

The public is concerned over the use of herbicides. Research has shown, however, that selected herbicides can be applied safely to the environment. Given current technology, herbicide treatment is the most cost effective method of controlling this unwanted understory vegetation.

Effects of herbicide use have been examined in Chapter 4 of the Final EIS. There is a potential for some non-mitigated effects on visual quality and vegetation. Using herbicide to control or eliminate undesirable understory vegetation affects visual quality for one to three years after application. The effect on vegetation would be a short-term change in vertical diversity. Most effects can be mitigated.

The effect of glyphosate herbicide on human health was also examined. Recent studies of the tumor-producing ability of glyphosate led the Environmental Protection Agency to consider it to be a weak cancer-causing agent. However, based on the information available, EPA does not expect any significant risk from the level of glyphosate to which humans are likely to be exposed (Dept. of Justice, 1985). Long-term studies on tissue accumulation show that feeding small doses of glyphosate to laboratory animals results in no abnormal mutation, birth defects, or nervous disorders (Scendy, et al., 1979).

Alternative D calls for use of herbicide on 2,000 acres a year. This is the lowest amount proposed except for Alternative B, which calls for no herbicide use. Alternative A calls for 3,100 acres per year; Alternative C, 2,800 acres; and Alternative E, 4,800 acres. For more information, see pages 4-37 to 4-41 of the Final EIS.

Alternative B was not selected as the preferred alternative because of its lower emphasis on timber volume, wildlife, recreation, payments to counties, and returns to the U.S. Treasury. Based on the EPA Studies, the Forest Service plans to use herbicides to provide for a continuous flow of timber volume and to meet the other goals and objectives of Alternative D. Forest Service policy on the Allegheny National Forest is to minimize the use of herbicides. If other economical and biologically feasible methods of regenerating timber are developed, they will be used.

4. Wildlife Habitat

The Pennsylvania Game Commission, Pennsylvania Fish Commission, USDI Fish and Wildlife Service, and the USDA Forest Service cooperatively manage wildlife and fish habitats on the Allegheny National Forest. This was considered, along with the following information, in determining a response to the wildlife problem statement.

Deer Populations

Deer populations on the Allegheny National Forest currently exceed the habitat's ability to support them. Deer are generally small in size and have poor antler development. Severe foraging of the understory vegetation by deer has displaced many other wildlife species and forced the use of expensive timber regeneration practices. This issue is a

major management concern to the Forest Service. Public response to this issue has generally supported a reduction in the deer herd as indicated on page C-56 of the Final EIS.

Included in the Forest Plan (and all of the alternatives) is an objective to manage the deer herd at a population level compatible with habitat carrying capacity. Carrying capacity is defined as the maximum number of animals that the habitat can sustain while maintaining a variety of understory vegetation in a healthy, vigorous condition. The process used to develop carrying capacity levels is described in Appendix B of the Final EIS, pages B-74 and B-75. Successful achievement of these levels will require the Forest Service and Pennsylvania Game Commission to cooperate in developing stable habitat conditions and regulating deer harvest levels.

In Alternative D, the Forest Service will final harvest 3,300 to 3,400 acres annually in the first and second decades. This will increase the acreage of hardwood timber in early successional stages and facilitate current deer management practices. In addition, the Forest Service will continue working with the Pennsylvania Game Commission to reduce the deer population to a level at or near carrying capacity. The Forest Service plans to continue efforts to encourage deer hunting in newly-cut areas by snowplowing roads, distributing hunter maps and providing more temporary access during hunting seasons in areas where vehicle use is otherwise restricted (gated roads).

While all alternatives would manage deer at a level equal to the habitat's carrying capacity, the habitat types provided by each alternative differ significantly. Since each type of habitat has a different wildlife carrying capacity, the total capability of each alternative to support wildlife populations varies. This total capability of each alternative is called "habitat capability". The Forest Plan would produce the highest big-game habitat capability levels of all alternatives considered, about 40 percent higher than those projected under Alternative B, the current situation. This translates into higher big-game population levels and better hunter success. For additional information, refer to Figure 2-9 and pages 4-103 to 4-108 of the Final EIS.

In addition to deer, the big-game figures mentioned above include effects on turkey and bear. Under Alternative D, the turkey habitat capability would increase significantly over the long run. This is a result of an active turkey management program which includes: 1) protection of key habitats,

2) regulation of public access, 3) wildlife improvement work, 4) reduction in the size and better distribution of regeneration cuts, 5) providing a good distribution of old growth stands (particularly in Management Areas 5, 6.1, 6.2, and 6.4), 6) increasing timber age class diversity, and 7) providing a variety of food sources by encouraging development of food-producing vegetation which currently exists in minor amounts.

In comparison, Alternatives A and E would show increases similar to those in the Alternative D. The turkey habitat capability levels for Alternatives B and C will be less than those of Alternative D.

Bear habitat would increase slightly during the first decade under Alternatives A, D, and E and then level off for succeeding decades. The bear habitat for Alternative B would remain at the current level, and decrease under Alternative C.

The Forest Plan offers the best approach to the deer problem. It recognizes the importance that residents place on high deer population levels, while striving to bring these levels in line with habitat carrying capacity. Alternative D also provides more habitat for turkey and bear, thus supporting higher populations and better hunter success.

Road Access

Human activity is encouraged by providing road access. This activity can adversely affect wildlife during nesting and young-rearing periods and in the critical winter season. The presence of roads also affects the recreational experiences of many Forest users. Resource managers can use road access as a tool to manage wildlife population levels by closing roads during nesting season and opening them during hunting season. The public has expressed concern over the number of new roads planned under each alternative, and has indicated a need to close or restrict vehicular access on many existing roads. Public comment on this issue is discussed on pages C-58, C-84, C-85, and C-86 of the Final EIS.

There is much public misunderstanding about National Forest roads. Some people become alarmed about the number of miles of road because they visualize high standard, two-lane roads such as those found in their own neighborhoods. Most National Forest roads are single-lane (about 12 feet wide) and unpaved. In the Forest Plan, about 90 percent of the proposed road construction will involve low standard (TSL D)

roads. Most of these low standard roads will be constructed for use in timber sales and they will be closed to the public after the sale ends, seeded with grass and then reopened 10-20 years later for use in another timber sale. In the meantime, the grassed roadways will benefit wildlife and be available for other dispersed recreation activities. Many areas of the Forest will have no roads at all.

Enclosed with this Record of Decision is a copy of the "National Forest Roads For All Uses" brochure. This brochure is designed to answer questions concerning National Forest roads.

The road management policy of each alternative was formulated under a management philosophy called the "Traffic Service Level" (TSL) concept. Under this concept, roads are provided only as needed to meet the specific resource objectives of each management area. Generally, roads will be built to a lower standard and cost less per mile than in the past.

Unfortunately, the TSL concept tends to increase the number of miles included in the National Forest road system inventory by adding low standard roads, previously classified as "temporary", to the road system inventory. The number of miles of road actually built will not change from the Draft EIS, but the miles counted on paper, as part of the road system inventory, will increase. These low standard roads are needed for timber harvesting and are discussed above.

Road density varies between alternatives as a result of differing resource objectives and management area assignments. The Forest Plan Standards and Guidelines for each alternative specify the road management policy to be practiced in each management area, including provisions to mitigate the adverse effects of roads on wildlife. Figure 4-17 of the Final EIS summarizes the long-term results of implementing the road management policy proposed for each alternative.

The alternatives were evaluated against two criteria: 1) the total miles of road construction/reconstruction proposed; and 2) the miles of road to be left open, closed, or restricted to public vehicle use.

The Forest Plan calls for construction/reconstruction of 353 miles of road in the first decade. Most of these roads will be constructed for use in timber sales and closed to public vehicular use after the sale ends. In comparison, Alternative E proposes 293 miles; Alternative A, 268 miles;

Alternative C, 230 miles; and Alternative B, 204 miles. For additional information, refer to Tables 4-12 and 4-13 in the Final EIS.

The estimated long-term effects of carrying out the road construction/reconstruction program proposed under each alternative are displayed in Figure 4-16 of the Final EIS. Currently, there are 898 miles of National Forest system roads on the Allegheny National Forest. The Forest Plan would have 1,675 miles of National Forest system road in place by the end of Decade 5. By comparison, Alternative C has 1,741 miles planned followed by Alternative E, 1,587 miles; Alternative A, 1,515 miles; and Alternative B, 1,494 miles. All long-term comparisons are based on the assumption that current management direction would continue for the next 50 years. This, of course, is not necessarily the case since the Forest Plan will be revised every 10-15 years.

The Forest Plan features the most restrictive road management policy, leaving open the fewest miles of road for public vehicular use (315 miles). In contrast, Alternative C would leave open 351 miles; Alternative B, 426 miles; Alternative A, 576 miles; and Alternative E, 680 miles. Expressed as a percent, the Forest Plan will have about 20 percent of its road system open for public vehicle use; 60 percent will be closed; and another 20 percent will have restricted use. This information is summarized in Figure 4-17 of the Final EIS and involves projections over the next 50 years.

This is an important public issue, but the level of road construction/reconstruction cannot be set at any fixed amount without adversely affecting the ability to meet an alternative's other goals and resource objectives. The reason for this is that road construction and reconstruction are supporting activities. The levels planned under each alternative represent the minimum mileage necessary to carry out the other management practices proposed for that alternative.

Since the level of road construction/reconstruction is determined by other resource objectives, the decision was based on how well each alternative's road management policy would mitigate the adverse affects of these roads. Alternative D is preferred because it proposes the most restrictive road management policy. This is the type of road policy supported by most of the general public.

Road access to the Forest will still be available, but the adverse impacts on wildlife, and on recreationists desiring experiences away from motor vehicles, will be reduced. It is recognized that this decision could adversely affect some recreationists, particularly those engaged in activities dependent on motor vehicles. These effects should be minimal, however, and will be partially offset by new motorized trail construction and judicious use of seasonal road closures.

Small game and Non-game Wildlife

The public has expressed support for increased management emphasis on small game and non-game wildlife species. The public is also concerned about timber harvest methods, the age when timber areas are regenerated, and the diversity of tree species. Public comments on these issues are discussed in the Final EIS on pages C-44 to C-46, C-50, C-52, C-53, C-59, C-60, C-63 and C-65.

The numbers and types of wildlife species inhabiting an area are dependent upon the amount of horizontal, vertical, and vegetative diversity. For purposes of this discussion, horizontal diversity refers to the relative abundance of large groups of trees with different ages; vertical diversity refers to the relative abundance of different tree ages within an area; and vegetative diversity refers to the number and types of vegetative species present across the Forest.

Timber harvesting is one of the most effective methods for influencing wildlife habitat. Table 4-25 of the Final EIS displays by alternative the projected amount and age class distribution of primary timber types of the Allegheny National Forest. This table shows that the Forest Plan would create greater age class (horizontal) diversity than Alternatives A, B, or E, but would be somewhat similar to Alternative C.

Concerning vertical diversity, Alternatives A and E would be the most diverse, followed by Alternatives B, C, and D, respectively. Differences in diversity between alternatives are primarily due to the amount of uneven-aged silviculture proposed under each alternative. Uneven-aged silviculture creates large areas of trees with greater vertical diversity, but with less horizontal diversity than even-aged silviculture.

In terms of vegetative diversity, the composition of timber types under the Forest Plan will remain about the same as it is today. If management direction were continued over the entire 150 year planning horizon, the Forest would be composed of the following timber types:

Allegheny hardwoods (Cherry, Maple, Ash, Popular)	51%
Oak	18%
Northern hardwoods (Sugar Maple, Beech, Birch)	16%
Savannahs	4%
Conifers	4%
Wildlife Openings	5%
Aspen	2%

In contrast, vegetative diversity (as measured by a balance of timber types) would increase under Alternatives A and B, as some of the older Allegheny hardwood stands convert to northern hardwoods; and decrease under Alternatives C and E, as oak is converted to northern hardwoods.

In addition to timber management, numerous wildlife practices such as developing ponds and permanent openings, or planting fruit trees and shrubs, can be used to create additional habitat for certain wildlife species. These same methods are also used to increase the capacity of existing habitat to support wildlife. Tables 4-16, 4-17, and 4-18 of the Final EIS show that the Forest Plan would provide for a moderate level of wildlife and fish habitat improvements. In contrast, Alternatives A and E propose the highest level of improvements, followed by Alternatives D (Forest Plan), B, and C, respectively. In all cases, the level of these improvements planned over each decade will be substantially higher than that of the current situation (Alternative B).

The effects of all timber and wildlife practices on wildlife habitat types are displayed in Table 4-26 of the Final EIS. This table shows that the Forest Plan would create the most balanced arrangement of deciduous and mixed hemlock-deciduous habitat types. The other alternatives would provide greater or lesser amounts of specific habitat types, but none show the same overall balance featured in the Forest Plan.

In addition, Table 4-27 and its subsequent discussion evaluate the effects of management practices on the habitat requirements of 15 key wildlife indicator species. These species are featured because their population levels can be monitored, and because their responses to habitat changes are similar to those of other wildlife species with similar habitat requirements. This analysis indicates the Forest

Plan would increase the habitat capability levels of seven species, maintain four species at their current level, and decrease habitat of the remaining four species. In comparison, Alternatives A and C would increase the habitat capability levels for nine species, followed by Alternatives B, D, and E with seven each.

Given these facts, the vegetative conditions created under the Forest Plan offer a balanced wildlife program. Each indicator species would be managed to at least minimum viable population levels, and the levels of many other wildlife species would be increased.. Horizontal diversity is maximized, and the array of habitat types balanced.

The Forest Plan favors those species associated with: 1) regenerating deciduous habitat, 2) regenerating hemlock habitat, and 3) old growth mixed hemlock-deciduous habitat. This mix of habitat types is appropriate and will support other Forest Plan objectives associated with visual quality and recreation opportunities. It is also recognized that this decision leads to reduced population levels for those species requiring mature deciduous habitat type.

5. Private Oil and Gas Development

This management problem was not a factor in making the decision on the preferred alternative. The rate of private oil and gas development and the effects on outputs were the same for each alternative. Also, production of private oil and gas reserves is not impaired by Forest Service management of surface resources in any alternative.

This nation's oil industry began 125 years ago within a few miles of the Allegheny National Forest. To date, ten percent of the Forest's surface area has been developed for oil and gas production. Extensive oil and gas deposits still underlie the National Forest.

Private owners control development of 94 percent of the oil, gas and mineral rights under the Forest. The future rate of oil and gas development is speculative, so both low and high demand projections were made in order to determine the environmental effects. The Forest Plan displays outputs and activities for both the low and the high oil and gas demand variations.

The Forest Service will continue to cooperate with private owners in development of mineral resources on the Allegheny National Forest in a manner which reduces the impacts on

surface resources. Reducing impacts may include such actions as relocating a proposed road to a better route, shifting a proposed drilling site to avoid a sensitive area, or providing stone to surface roads.

6. Wilderness

This management problem was not a factor in selecting the preferred alternative. Each alternative allocates 9,337 acres to the Hickory Creek Wilderness, 368 acres to the Allegheny Islands Wilderness, and 23,100 acres to the Allegheny National Recreation Area. These areas were created through the Pennsylvania Wilderness Act of 1984. The legislation also released all remaining roadless areas from wilderness consideration during this planning period (10-15 years).

COMPATIBILITY WITH PLANS OF OTHERS

The Allegheny National Forest took into consideration the compatibility of the alternatives with the plans of other private and public organizations. All alternatives are compatible with these other plans. Consultation with others is described in Appendix A of the Final EIS.

- Dispersed recreation activities and the construction of new trails are compatible with those provided by the Commonwealth of Pennsylvania. See the Pennsylvania Recreation Plan, 1980-1985.
- Making National Forest land available for oil and gas leasing is required by law and is consistent with mineral management activities of the U. S. Department of Interior.
- The production of a variety of timber products is compatible with the objectives of the Commonwealth Forest Resource Plan, 1985.
- Improvements in wildlife and fish habitat are compatible with the objectives of both the Pennsylvania Game Commission and Pennsylvania Fish Commission.
- The protection of special or unique values, such as State Scenic Rivers and some State threatened and endangered species, is compatible with the State's interests. The State supports identifying and evaluating such values.

POTENTIAL FOR CONTROVERSY

Public controversy that might be caused by the alternatives was considered. Controversy would increase or decrease the same in the alternatives unless otherwise noted.

Although controversy will continue, we believe that adequate response has been made to the public issues by the range of alternatives considered. Also, to consider alternatives which would require changes in existing laws would not be appropriate, given the strong and opposing beliefs of so many people. The views of one side versus another are adequately reflected in the alternatives. The Forest Plan provides a wide range of environmental conditions and choices for goods, services and uses.

- Recreation use patterns will change because of a combination of road closures, road construction, and redistribution of the kinds and amounts of use according to the location of management areas. Some people will be opposed to these changes.

- The controversy over new development on the Allegheny Reservoir will continue. The management objectives for this area reflect the input received during the public review process.

- The controversy over private oil and gas development will continue. Private individuals will continue to control about 94 percent of the subsurface mineral rights on the Allegheny National Forest.

- The controversy over even-aged silviculture will continue. Based upon the acreages involved, controversy would be highest in Alternative C and lowest in Alternatives A and E.

- The controversy over high deer populations and their effects on timber regeneration will continue. The combination of more cutting, improved habitat conditions, and lower population level targets (of Pennsylvania Game Commission), will slowly reduce the problem and lead to a healthier deer population.

- The controversy over the recognition and management of special areas will be greatly reduced. Some people will continue, however, to push for more wilderness while others would like to eliminate it altogether.

- Opposition to road construction will continue, but closing many of the new roads should help to alleviate some of the concerns.

COST EFFICIENCY

The National Forest Management Act (NFMA) requires that "each alternative will present to the extent practicable the most cost-efficient combination of management practices examined that can meet the objectives established in the alternative."

Cost efficiency is measured through the use of present net value. Present net value (PNV) is the difference in dollars between anticipated benefits and anticipated costs. A large PNV indicates that taxpayers, as owners of the National Forest, could realize a large net return from their investment. A smaller PNV indicates a smaller net return. Since these benefits and costs are realized in the future, their value must be discounted back to the present.

The Forest incorporated cost efficiency into the planning process in several places to assure this requirement was met. Cost estimates were included in the management prescriptions by the interdisciplinary team. The tentative prescriptions were then screened. Those which were not cost efficient and added no further benefits were deleted and not used in the analysis. Additional information on the development of prescriptions and their role in the analysis can be found in Appendix B, the section titled "The Forest Planning Model, Identification of Prescriptions".

A linear programming technique (FORPLAN) was used to select the most cost-efficient set of prescriptions to meet the goals and objectives of each alternative. This was accomplished by selecting prescriptions within each alternative that have the highest net economic priced benefits. This was done while still meeting the other objectives of the alternative.

Each alternative developed for the Allegheny National Forest has a different set of goals and objectives in response to the management problems, and each consists of the most cost-efficient set of prescriptions needed to meet those goals and objectives. Lower PNV in an alternative represents the economic cost of producing non-priced benefits and addressing issues and concerns. The decision as to whether the values of these non-priced benefits are worth their cost is based on the reader's judgment.

Tables 1, 2, and 3 summarize the benefits, costs, and present net values of each alternative considered in the Final EIS.

TABLE 1 - SUMMARY OF PRESENT NET VALUE, TOTAL DISCOUNTED BENEFITS, AND TOTAL DISCOUNTED COSTS BY ALTERNATIVE
(Million Dollars)

Alternative	Present Net Value	Total Discounted Benefits	Total Discounted Costs
E (RPA)	583	758	175
D (Preferred)	541	704	163
C	521	673	152
A	506	646	139
B (Current)	440	553	114

TABLE 2 - SUMMARY OF DISCOUNTED BENEFITS BY ELEMENT[1]
(Million Dollars)

Alternative	Rec.	Wilder-ness	Wild-life	Tim-ber	Oil/ Gas	Sup-port	Totals
E (RPA)	347	4	172	234	1	0	758
D (Preferred)	271	4	139	290	1	0	704
C	238	4	117	313	1	0	673
A	299	4	213	129	1	0	646
B (Current)	236	4	132	181	1	0	553

TABLE 3 - SUMMARY OF DISCOUNTED COSTS BY ELEMENT[1]
(Million Dollars)

Alternative	Rec.	Wilder-ness.	Wild-life	Tim-ber	Oil/ Gas	Sup-port	Totals
E (RPA)	36	1	19	73	2	44	175
D (Preferred)	37	1	16	67	2	39	163
C	32	1	4	72	2	40	152
A	34	1	26	39	2	36	139
B (Current)	28	1	5	42	2	36	114

[1] Comparisons of benefits and costs provide a broad indication of relationships, but it should be noted that some costs are difficult to separate by resource element under the multiple-use management concept.

Cost Efficiency

As shown in Table 1, Alternative E has the highest total PNV of all alternatives considered in the EIS. Even though all alternatives maximize PNV and include the most efficient mix of management prescriptions, differences in PNV for each alternative do occur for the following reasons:

- Alternatives have different goals and objectives.
- Alternatives respond differently to management problems.
- Alternatives achieve different levels of nonpriced outputs.

The goals and objectives of both Alternatives D and E emphasize the production of market and non-market goods and services. To examine where the emphasis is placed in an alternative, discounted benefits and costs by resource element must be analyzed (Tables 2 and 3).

Alternative E emphasizes increases in dispersed and developed recreation, wildlife and fish; long rotation and uneven-aged timber management. These emphases are reflected in the discounted benefits and costs by element. The discounted benefits in recreation are higher in Alternative E than in any other alternative, due to the high emphasis on both large and small-scale recreation developments, resorts and dispersed recreation. The timber element reflects high costs and low returns for the volume produced due to the emphasis on long rotation and uneven-aged management which increases timber sales costs and favors less valuable species than even-aged management.

Alternative D emphasizes moderate increases in recreation and wildlife, and an even-aged silvicultural system for timber management. The moderate investment in recreation results in a lower discounted benefit in that element as compared to Alternative E. The timber element actually has higher discounted benefits and lower discounted costs than does Alternative E, because of Alternative D's emphasis on even-aged management.

Examination of the remaining alternatives shows variation based on each alternative's emphasis. Alternative C emphasizes market outputs and, therefore, has the highest discounted benefits in the timber element. Alternative A emphasizes nonmarket outputs and, as a result, the benefits in the recreation and wildlife elements are high.

Other economic indicators, in addition to PNV, were used in the selection of the preferred alternative. These indicators are net receipts, total costs, total receipts, non-cash benefits, payments to counties, and returns to the U.S. Treasury. A complete discussion of these indicators can be found in Chapter 2 of the Final EIS, pages 2-66 to 2-74.

In the selection of a preferred alternative, the alternative that maximizes net public benefits must be selected. Economic efficiency is only one factor to be considered when evaluating alternatives for net public benefits. Other factors are social effects, environmental effects (both physical and biological), and public concerns. Some are quantifiable, and some are non-quantifiable or non-priced benefits. All must be evaluated prior to making a decision. This means that an alternative that maximizes PNV may not necessarily be the alternative that maximizes net public benefits when all factors are considered.

Alternative E, the alternative with the highest PNV, was not chosen because it had lower timber benefits and higher timber costs, less returns to the U.S. Treasury, and less payments to counties than Alternatives C and D. The PNV for the timber element is 38 percent higher in Alternative D than in Alternative E. Alternative C was not chosen because the levels of wildlife improvement work, the mix of recreation opportunities, and the level of trail construction planned under Alternative D were preferrable to those offered in Alternative C.

ENVIRONMENTAL CONSEQUENCES AND ENVIRONMENTALLY PREFERABLE ALTERNATIVE

All alternatives are environmentally, technically and legally feasible. An environmentally preferable alternative is one that will cause the least effects to the physical and biological environment. It is also one that better protects, preserves, and enhances historic, cultural, and natural resources.

Damage to the physical and biological environment is caused by implementing management practices and is described in the Final EIS, pages 4-8 to 4-60. All of the alternatives meet the minimum legal requirements of NFMA, but the type and amounts of management practices will vary by alternative. Smaller total amounts of the management practices are indicative of less human activity and less risk of effects on the environment. Table 4 summarizes by alternative the type and amount of each management practice planned for Decade 1.

The cumulative effects on each environmental element of implementing all of the management practices are discussed in the Final EIS, pages 4-61 to 4-122. Table 5 summarizes the results of this discussion by ranking the alternatives, based upon the estimated cumulative effects of each alternative on the elements of the environment. The higher the ranking, the more severe the potential effects of implementing an alternative. Table 5 includes only those elements of the environment that show a difference between alternatives. The environmentally preferred alternative would then be the alternative with the lowest overall ranking.

TABLE 4 - COMPARISON OF MANAGEMENT PRACTICES BY ALTERNATIVE
(Amounts planned for Decade 1)

Management Practice (expressed in units indicated in parenthesis)	Alternatives				
	A	B	C	D	E
New/Expanded Rec Areas					
- Large Scale Areas (#)	0	0	4	2	2
- Small Scale Areas (#)	1	1	0	3	3
Trail Construction (miles)	73	318	238	204	465
Even-aged Harvest (Thousand acres)	3	30	67	33	7
Thinning/Uneven-aged Harvest (Thousand acres)	78	29	8	100	150
Road Const/Reconst (miles)	268	204	230	353	293
Non-structural Wildlife Improvements (acres)	35	20	17	24	31
Impoundments (#)	5	0	0	1	1
Structural Wildlife Habitat Improvements (#)	132	4	0	59	118
Herbicide Use (Thousand acres)	31	0	28	20	48

TABLE 5 - COMPARISON OF CUMULATIVE EFFECTS BY ALTERNATIVE
(Scale of 1-5: 1 = Least Effect; 5 = Most Effect)

Elements of the Environment	Alternatives				
	A	B	C	D	E
Soils	2	1	3	4	5
Mineral Materials (Other Minerals)	2	1	4	4	3
Visual Resource	1	3	5	4	3
Water Quality	2	2	3	4	5
Noise	2	2	4	3	4
Riparian Areas	1	4	4	3	2
Vegetation	5	3	2	2	4
Fish	1	5	5	3	2
Recreation Opportunities	1	3	4	3	5

Based upon the summary of management practices (Table 4) and our evaluation of the estimated long-term cumulative effects (Table 5), Alternative A would create the least disturbance and Alternative C would create the most disturbance to the environment. Therefore, we believe Alternative A is the environmentally preferable alternative, both in the next decade and in the long term. Alternative B is also environmentally preferable to the Forest Plan.

Given this fact, however, the Forest Plan is still the best choice. Forest Plan Standards and Guidelines are designed to mitigate the potential for severe environmental damage. In addition, we believe Alternative D provides the most desirable level of goods, services and uses to the public. Alternatives A and B will result in less variety of recreation uses, less visual, wildlife, and timber diversity, and lower timber outputs.

VII. PUBLIC PARTICIPATION

The Forest Service conducted an active public involvement program. Federal, State, and local agencies have been informed and consulted throughout the planning effort, and Forest users have had an opportunity to participate. See Appendix A of the Final EIS for a description of the public participation activities undertaken.

The public participation activities described in Appendix A comply with the National Environmental Protection Act (NEPA) regulations [40 CFR 1500.2 (d)]. The public input received was used as the basis for adjusting the preferred alternative.

A Notice of Intent to prepare an EIS for the Forest Plan was published in the Federal Register, January 19, 1981 (Vol. 26, No. 12, p. 5029). This notice started the scoping process to identify issues and concerns and asked Federal, State, and local agencies and the public to comment on an initial list of issues and concerns developed by the Forest. These public issues and management concerns established the scope of the EIS (40 CFR 1501.7 and 1508.25).

Throughout the planning process, meetings were held with leaders from all interest groups and government agencies. Information was exchanged from both sides and every effort was made to keep people informed on what was happening. A list of these meetings is disclosed on pages A-1 to A-6 of the Final EIS.

Public Participation

A Notice of Availability of the Draft EIS and Proposed Forest Plan appeared in the Federal Register on January 18, 1985. Over 1,100 copies of the Proposed Plan and Draft EIS documents were distributed to the public.

Public meetings were held during the comment period which lasted until April 29, 1985. One thousand, nine hundred three (1903) comments were received from various individuals, groups and agency representatives. These comments were considered in preparation of the final documents and in the final decision.

Following the close of the public comment period, all letters and petitions were read and evaluated. During this review, it became apparent that additional public contacts would be necessary to clear up misunderstandings, clarify proposed changes, and discuss possible solutions. A list of the interest groups and government agencies contacted after the close of the comment period is contained in the Final EIS, page A-7.

MAJOR CHANGES MADE IN RESPONSE TO PUBLIC COMMENT

Public comments on the Draft EIS expanded some issues and changed the significance of others. The following is a list of the major changes made to the planning documents. The page numbers shown in parentheses at the end of each change refer to the section in Apprendix C where that change is discussed.

- Removed from Alternative D the proposed resort at Sugar Bay and added a motel and restaurant complex near Kinzua Beach (pages C-24 to C-28).

- Revised the amount of planned off-road vehicle trail construction in each alternative to provide for a wider range of investment levels (pages C-32 and C-33).

- Modified the acreage assignments to Management Areas 5 and 6.4 in all alternatives to reflect provisions of the Pennsylvania Wilderness Act of 1984 (pages C-71 to C-74).

- Modified the Forest Plan Standards and Guidelines for Management Area 6.1 to exclude off-road vehicle use in the Clarion River and Minister Valley Areas (pages C-33 and C-35).

- Changed each alternative to reflect four new candidate Research Natural Areas - Muzette Tract, Crulls Island, Thompson Island, and Sheffield Compartment 126 (page C-35).

- Changed Alternative B, the current situation, to reflect no herbicide use (pages C-42 and C-43).

- Revised the Final EIS and Forest Plan to explain that most planned regeneration cutting is shelterwood cutting, not clearcutting (pages C-44 to C-45).

- Modified Alternative D by moving 15,000 acres from Management Area 6.1 to Management Area 6.2. This increased the acreage assigned to even-aged management and semi-primitive non-motorized recreation (pages C-33, C-34, and C-47).

- Revised Alternative D to eliminate any conversion of oak to Allegheny hardwoods (page C-50).

- Modified assignments in Alternative D to include 7,000 acres of Management Area 1. This acreage was removed from Management Area 6.1 and will be managed intensively for ruffed grouse (pages C-47, C-60, and C-61).

- Improved the wildlife management discussion in the 2600 section of the Standards and Guidelines for all management areas. Revised standards and guidelines for Management Area 6.1 to explain what type of timber harvesting will be made for wildlife purposes (pages C-47 to C-49 and C-56 to C-66).

- Completed a sensitivity analysis of the effects of a high rate of oil and gas development on Alternative D. Revised the Final EIS to show the estimated effects of a high rate of development on all the alternatives (page C-69).

- Expanded the discussion in the Plan and in Chapters 3 and 4 of the Final EIS to explain leasing procedures, management of mineral materials, availability of mineral resources, oil and gas demand, and private mineral values (pages C-67 to C-70, C-72, and C-73).

- Explained the Traffic Service Level (TSL) Concept in the Final EIS. The TSL concept allows the Forest Service additional flexibility in linking road standards to the resource objectives of each management area. Under this

concept, new roads will be built to a lower standard and thus cost less per mile than is possible under current management. The total miles of Forest Service System Road will also increase due to inclusion of roads previously classified as "temporary" (pages C-84 to C-86).

VIII. ALTERNATIVES CONSIDERED

The National Forest Management Act Regulations [36 CFR 219.12(f)] require that a broad range of reasonable alternatives be formulated. An interdisciplinary team was used to develop these alternatives and to identify which alternative comes nearest to maximizing net public benefits.

This section describes only those changes affecting the goals and objectives of each alternative. It does not address the many editorial changes made to clarify various sections of Planning Documents.

The process used to formulate the alternatives is described in the Final EIS on page 2-5. Changes made between the Draft EIS and Final EIS are discussed in the Final EIS, pages 1-19 to 1-24, and consist of:

- Alternative B changed to exclude all herbicide use for Decades 1-15.
- Changed the road mileage figures for all alternatives to reflect the Traffic Service Level Concept for road management.
- Changed the management area assignments for Alternative D. The acreage in Management Area 6.1 was reduced by 22,000 acres while the acreage in Management Areas 1 and 6.2 were increased by 7,000 and 15,000 acres, respectively.
- Modified documents to reflect the effects of high and low oil and gas demand on all alternatives.
- Provided a range of alternatives for off-road vehicle (ORV) trail development.
- Prohibited any conversion of oak to Allegheny hardwoods in Alternative D.
- Deleted Sugar Bay resort from Alternative D.
- Modified documents to reflect 1984 Pennsylvania wilderness legislation.

- Added a discussion on Research Natural Areas to all alternatives.
- Revised Alternative D to provide for a minimum of 15,000 acres of old growth in all decades.

ALTERNATIVES CONSIDERED IN DETAIL

The following alternatives are described and evaluated in detail in the Final EIS:

Alternative A. Emphasize non-market benefits to society -- those benefits that do not return dollars to the U.S. Treasury. Examples include hiking, hunting, and birdwatching.

Alternative B. Provide goods and services at approximately the current level (the No Action Alternative or current situation).

Alternative C. Emphasize the production of priced market benefits, those that return dollars to the U.S. Treasury. Examples include sawtimber volume and developed recreation.

Alternative D. Emphasize a moderate increase in the production of both market and non-market benefits.

Alternative E. Emphasize the production of both market and non-market benefits with a moderate emphasis on increased sawtimber production and a high emphasis on both developed and dispersed recreation.

ALTERNATIVES CONSIDERED BUT ELIMINATED

Alternatives considered but eliminated include: 1)Equal Age Class Distribution Alternative, 2) Intense Semi-Primitive Recreation Alternative, and 3) Departure from Non-declining Flow (Timber) Alternative. These are discussed in detail on page 2-21 of the Final EIS.

IX. IMPLEMENTATION, MONITORING, AND MITIGATION

The Forest Plan, with exceptions as noted on page 6, will be implemented 30 days after the Notice of Availability of the Plan, Final EIS, and Record of Decision appear in the Federal Register. The time needed to bring all activities into compliance with the Plan will vary depending on the type of project.

The Forest Plan incorporates, without change, the special area plans for the Kane Experimental Forest, Tionesta Scenic Area, Tionesta Research Natural Area, and Hearts Content Scenic Area (Title 36, 219.2). These plans were required by Secretary of Agriculture Regulations U-3 and U-4.

The Forest Plan is not a plan for the many activities needed to carry on the day-to-day internal operations of the Allegheny National Forest. For example, the Plan does not address personnel matters, law enforcement, fleet equipment, or organizational changes. However, it is a plan for managing the public lands in an environmentally sound manner to produce goods, services and uses in a way that maximizes long-term public benefits.

The emphasis of the Plan is not site-specific decisions or specific outputs. Rather, it is the application of management practices to areas of land to achieve multiple-use goals and objectives with economic efficiency. To respond to changing needs and opportunities, Congressional land designations, catastrophic events, or new technologies, the Plan may have to be amended or revised. If the change significantly affects the Plan, it must be made by the same procedure used in the development and approval of the original Plan. If the change does not significantly affect the Plan, the Forest Supervisor may amend it by a less formal process which includes public notice and compliance with NEPA.

It is important to note that all proposals in the Plan can be accomplished from a physical, biological, economic and legal perspective. It is not certain they will be accomplished. First, the outputs proposed by the Plan are projections of targets. For example, the number of recreation visitor days meeting Recreation Opportunity Spectrum class standards is a target number the Forest will strive to attain. Another example is long-term sustained yield. That is the maximum regulated volume of timber that can be produced over the planning period, not the volume that will be sold.

Secondly, all outputs may be affected by the budget. Inherent in the Plan's proposed outputs is the budget to achieve them. The Plan is implemented by way of various site-specific projects, such as the building of a road, development of a campground, or the sale of a timber stand.

If the budget is changed in any given year, the projects scheduled for that year may have to be rescheduled; however, the management area prescriptions and the areas to which they are applied in the Plan will not change unless the Plan is revised. If the budget is significantly different from that in the Plan over a period of several years, the Plan itself may have to be amended [36 CFR 219.10(e)] and, consequently, will reflect different target outputs.

As a long-range strategy for the Forest, this Plan and accompanying Final EIS are programmatic in nature. During implementation, when the various projects are designed, more site-specific analyses will be developed. These analyses (Forest Service Handbook 1909.15) may result in environmental assessments (40 CFR 1508.9), environmental impact statements (40 CFR 1508.11) or categorical exclusions (40 CFR 1508.4) and possibly an amendment or revision of the Plan [36 CFR 219.10(f) and (g)]. Any resulting documents will be tiered to the Final EIS for the Plan (40 CFR 1508.28).

Existing projects, as well as contractual obligations, will continue as originally planned. During implementation, however, the following minimum requirements, subject to valid existing rights, will be met. The Forest Supervisor will assure that 1) annual program proposals and projects are consistent with the Plan; 2) program budget proposals and objectives are consistent with management direction specified in the Plan; and 3) implementation is in compliance with the Regional Guide and 36 CFR 219.10(e), 36 CFR 219.11(d), and 36 CFR 219.27.

Proposals to use National Forest System (NFS) lands will be reviewed for consistency with the Plan. Management direction contained in Chapter 4 of the Plan will be used to analyze any proposal involving use of NFS lands. All permits, contracts and other instruments for occupancy and use of the NFS lands must be consistent with the Management Direction in Chapter 4 as required by 16 USC 1604(i) and 36 CFR 219.10(e).

Implementation is guided by the management requirements contained in the Forest Direction, including the management area prescriptions, found in Chapter 4 of the Plan. These management requirements were developed through an interdisciplinary effort and contain measures necessary to mitigate or avoid long-term adverse effects.

Any unavoidable adverse environmental effects, such as the disruptive effect of timber harvest on recreation, will be temporary and will involve only a small percentage of the Forest at any one time. To the best of our knowledge, all practical mitigation measures are included in Chapter 4 of the Plan. These measures are hereby adopted.

The monitoring and evaluation requirements established in Forest Plan Chapter 5 are hereby adopted. Management practices will be observed and their effects recorded in order to ensure that the goals and objectives of the Forest Plan are being met and that the anticipated results are the actual results.

The monitoring results will be evaluated at intervals established in the Forest Plan in order to determine whether changes are needed to make it more effective or to respond to changed or unexpected conditions. Data gathered during monitoring will be used to modify implementation schedules, improve mitigation measures and assess the need for amending or revising the Plan.

Amendment of the Plan may be done at any time by the Forest Supervisor, as needed to carry out the goals and objectives of the Plan. Revision will normally be done on a ten-year cycle or at least every 15 years. The Plan may also be revised whenever the Forest Supervisor determines conditions in the planning area or other items have changed significantly [36 CFR 219.10(f)(g)].

Copies of future amendments to the Forest Plan and supplements to the Final EIS will be sent to those listed in Appendix C of the Final EIS. Others can obtain copies by writing the Forest Supervisor at the address shown on page 1.

In review of the public comments on the Draft EIS, it was noted that some people were unconvinced that National Forest management would not have some particular adverse impacts. The Forest Service cannot address these concerns to their satisfaction except to stop using some management practices or to prohibit some uses entirely. Because of this public concern, the management practices will be carefully monitored and evaluated.

This Forest Plan is not a rigid tool developed now to manage the Allegheny National Forest forever. Change can and will be made in the Forest Plan as it is revised every 10 to 15 years. The decision made today will be reviewed

periodically and, with appropriate public involvement, change will take place whenever needed, including changes in any of the management practices. Future management needs and other resource uses require the Forest Service to maintain this land management plan as a dynamic document.

X. RIGHT TO APPEAL

This decision is subject to appeal in accordance with the provisions of 36 CFR 211.18. Notice of appeal must be in writing and submitted to Larry Henson, Regional Forester, Eastern Region, USDA Forest Service, 310 West Wisconsin Avenue, Milwaukee, Wisconsin 53203. The notice of appeal, a statement of reasons to support the appeal, and any request for oral presentation must be filed within 45 days after the date of this decision. In accordance with 40 CFR 1506.10(b)(2) and 36 CFR 211.18(c)(3), the appeal period cannot expire prior to 30 days after publication by the Environmental Protection Agency of the Notice of Availability of the Final EIS in the Federal Register.

An appeal of my decision does not halt Forest Plan implementation. A stay of the decision must be requested. A stay may be requested at any time during the appeal period until a decision on the appeal is made by the Chief, USDA Forest Service.

No decisions on site-specific projects are made in this document, although a number of projects are identified. Those projects identified in various parts of the Plan or Final EIS are only included in order to clarify discussions, illustrate a point, or show that Forest Plan goals and objectives can be achieved.

Final decisions on site-specific projects will be made during Forest Plan implementation after appropriate analysis and documentation meeting NEPA requirements. Parties dissatisfied with a specific project should appeal the site-specific decision once it is made.

The appeal process for projects is the same as that described above for the Forest Plan, except notice of appeal must be sent to the person making the decision. This will normally be a District Ranger or the Forest Supervisor.

Larry Henson

LARRY HENSON, Regional Forester

APR 24 1986

Date

Right to Appeal

XI. LEGAL REFERENCES The following references and citations are included here to make the text of the Record of Decision more readable.

ROD Page	Topic	Citation
1	NFMA planning regulations	36 CFR Part 219 47 FR 43026, 9/30/82
1	CEQ rules implementing NEPA	40 CFR Part 1500
5	Maximizing net public benefit	36 CFR Part 219.1(a)
5	Decision to approve the Forest Plan	36 CFR 219.1
6	Forest Plan and EIS as combined documents	40 CFR 1506.4 40 CFR 1508.25
6	Federal Wild and Scenic Rivers Act	PL 95-625 PL 90-542
25	Pennsylvania Wilderness Act of 1984	PL 98-585
27	Cost efficiency of alternatives	36 CFR 219.12(f)(8)
30	Alternative that maximizes present net value	36 CFR 219.12(j)(2)
32	Public comments on the Draft EIS	36 CFR 219.6 40 CFR 1500.2(d)
32	Scope of the EIS	40 CFR 1501.7 40 CFR 1508.25
35	Alternatives considered	36 CFR 219.12(f)
38	Changing implementation schedules	36 CFR 219.10(e)
38	Forest Plan implementation:	
	Site-specific analysis	FSH 1909.15
	Environmental assessment	40 CFR 1508.9
	Environmental impact statement	40 CFR 1508.11
	Categorical exclusions	40 CFR 1508.4
	Plan amendment or revision	36 CFR 219.10(f)(g)
	Tiering to Forest Plan	40 CFR 1508.28
38	Implementation of Forest Plan	36 CFR 219.10(e) 36 CFR 219.11(d) 36 CFR 219.27
38	Permits, contracts, and other instruments	16 USC 1604(i) 36 CFR 219.10(e)
39	Amending the Forest Plan	36 CFR 219.10(f)(g)
40	Decision subject to appeal	36 CFR 211.18
40	Extent of the appeal period	40 CFR 1506.10(b)(2) 36 CFR 211.18(c)(3)

SUMMARY OF FOREST PLAN AMENDMENTS

ALLEGHENY NATIONAL FOREST

Amendment Number	*Date*	*Content Summary*
1	February 5, 1991	Corrects three typographical errors made while editing the Forest Plan and revises a portion of the Management Area Map to show the correct location of a boundary on the Sheffield Ranger District.
2	May 22, 1991	Establishes general "programmatic" direction and guidance for controlling understory vegetation on the Allegheny National Forest and modifies the existing understory vegetation management direction (i e , it allows Forest personnel to consider the use of both glyphosate and sulfometuron methyl, either individually or in combination, to accomplish understory vegetation management).
3	June 28, 1991	Brings the Forest Plan into conformance with 36 CFR 261.12(e), as amended, and current Standards and Guidelines listed in the Trails Management Handbook (6/85)
4	September 30, 1994	Allocates 12 tracts of land added to the Allegheny National Forest since 1982 to appropriate Management Area designations
5	November 25, 1996	Allocates at 36 59-acre tract of land added to the Allegheny National Forest in Fiscal Year 1996 to an appropriate Management Area designation Also removes a 69-acre tract from National Forest ownership
6	December 19, 1996	Provides direction for fish habitat management, including desired conditions for cold- and warm-water fish habitat It also includes standards and guidelines for improvement and restoration work, and for coordination of water resources with various land disturbing activities The amendment designates four Remote Trout Streams, and one stream will be added to the State's Wilderness Trout Stream program Aquatic species are identified for monitoring.
7	September 4, 1997	Designates a corridor boundary for the Allegheny National Wild and Scenic River, approves the River Management Plan, and provides Forest Plan Standards and Guidelines for managing federal lands within the designated corridor
8	September 8, 1997	Establishes both general "programmatic" and "site-specific" direction and guidance for controlling understory vegetation on electric utility rights-of-way crossing the Allegheny National Forest by following guidelines established in the EIS for Vegetation Management on Electric Utility Rights-of-way (May 1997) and its associated Record of Decision
9	September 30, 1997	Disposal of a two-acre parcel as the result of a Small Tracts Act Claim

LAND AND RESOURCE MANAGEMENT PLAN

ALLEGHENY NATIONAL FOREST

Amendment No 1

February 5, 1991

Posting Notice: Amendments to this Forest Plan are numbered consecutively. Check the last transmittal received for this Plan to see that the above amentment is received and posted. Do not post this amendment until the missing one(s) is received and posted. After posting, retain this transmittal until the next amendment to this Plan is received. Place it at the from of the Plan immediately behind the title page.

Page Code	Page Color	Superseded (Number of Pages)	New
4-29	Cream	1	1
4-84	Tan	1	1
4-130	Tan	1	1
Management Area Map	White	0	1

Digest.

p. 4-29 Page 4-29 was revised to correct a reference to a page number and table.

p 4-84 Page 4-84 was revised to correct a column heading on a table.

p 4-130 Page 4-130 was revised to correct a chart showing Visual Quality Objectives.

Management Area Map A portion of the Management Area Map was revised to show the correct Management Area boundary on a portion of the Sheffield Ranger District.

Reason(s) for amendment The need to amend the Forest Plan is derived from several sources, as stated in the Forest Service Manual (FSM). This amendment is made for the following reason·

1 Changes to correct planning errors (FSM 1922.5)

The following paragraphs describe the corrections in more detail:

- On page 4-29, paragraph 3, the reference to Table 4-24 was incorrect. The revised page gives the correct reference, Table 4-26, enabling readers to access the table

* On page 4-84, Table 4-13, the heading for the second column from the right was incorrectly labeled "Decade 1." The revised page correctly labels the column as "Decade 2."

* On page 4-130, the Visual Quality Objective (VQO) chart was incorrect. The VQO charts in the "6" series of Management Areas (6.1, 6.2, 6.3, and 6.4) should be identical. The revised page now displays the correct chart.

* The Management Area (MA) Map incorrectly showed the boundary running along a portion of Hearts Content Road on the Sheffield Ranger District between Forest Road 116, on the west, to the private land boundary on the east. The actual boundary for MA 6.2 should have followed the snowmobile trail which is located south of the road, between Forest Roads 116 and 114 and then followed the powerline, approximately 200 feet from the road, east to private land.

  A section of the map has been revised to show the correct MA boundary location The total area involved in this correction is approximately 100 acres, parts of which are now correctly mapped as MA 6 1 and MA 3.0.

None of these revisions will significantly alter the Forest's multiple-use goals and objectives.

DAVID J. WRIGHT
Forest Supervisor

2/5/91
Date

All oil storage tanks should be centrally located in batteries whenever practical and kept at least 100 feet from drainages or streams. Batteries will be constructed to meet all federal and state requirements for spill containment

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife Management

We began the planning process by reviewing the habitat requirements for all species that occur on the Forest. Special emphasis was directed at determining the effects of management on endangered species, species of special concern in Pennsylvania, important game species, furbearers, and non-game species. Management indicator species were selected to represent species having similar habitat requirements. We determined the habitat needed to maintain viable populations for each indicator species (See Table 4-3 in the Final EIS).

We then designed the individual management area objectives and the standards and guidelines to provide specific habitat conditions. Management areas vary in their capability to support each indicator species and associated species. After we developed the alternatives and knew the mix of management areas chosen in each, we evaluated the effects on big-game, small-game, furbearers, waterfowl, endangered species, species of special concern in Pennsylvania, and management indicator species. We found that each alternative provides adequate habitat to maintain viable populations of the species that occur in this area. For more information, see the discussion about wildlife in Chapter 4, Section D of the Final EIS. Table 4-26 displays the Forest-wide wildlife habitat objectives. The land management planning process records contain the habitat requirements for the individual species

Timber management practices will be used to improve wildlife habitat where feasible. Wildlife habitat improvement practices will be used to provide important components where timber management practices will not achieve our habitat objectives. Old growth timber stands will complement the wildlife habitats that are managed more intensively.

Wildlife habitat management investments should be directed towards the species emphasized in each management area. It should also include opportunities to manage specialized habitats and inclusions to benefit game and non-game species, indicator species, and species of special concern

All fish and wildlife stocking in waters and/or on lands administered by the Allegheny National Forest shall proceed only after concurrence is obtained from the Forest Service in cooperation with the Pennsylvania Fish and Game Commissions.

Habitat improvements for the species emphasized in each prescription should be designed to meet requirements of as many indicator species as practical.

Management indicator species for the Allegheny National Forest are: American Woodcock, Ruffed Grouse, Red-shouldered Hawk, Yellow-bellied Sapsucker, Pileated Woodpecker, Magnolia Warbler, Hermit Thrush, Black-throated Green Warbler, Great Blue Heron, Barred Owl, Beaver, White-tailed Deer, Rattlesnake, Brook Trout, and Walleye.

Openings

Permanent openings may include savannans, hawthorne thickets, old apple orchards, old fields, pipelines, utility rights-of-way, American hornbeam stands, and other areas seeded to wildlife mixtures or composed of native vegetation.

Permanent openings will be provided on approximately six percent of the Forest. This will include four percent savannahs and two percent in other types of openings (native shrubs, old fields, pipelines, utility rights-of-way, and areas seeded to wildlife mixtures).

Openings on other private land and State Game Lands will be included in any analysis to determine the need for additional acres in this habitat component.

Higher priority will be given to habitat management on large blocks of National Forest than on small isolated tracts.

Some areas will be managed along selected roads and water shorelines to attract wildlife for public viewing purposes

Seeding of annual grain crops will be used primarily to establish desirable grasses and legumes.

Openings for wildlife species that are sensitive to disturbances by man will generally be located away from main roadways. Access may be regulated to minimize disturbance

The following types of management activities will be ongoing within the area: timber harvesting and hauling of forest products; reforestation, timber stand improvements; wildlife habitat management work; and road, trail, and recreation facility construction and maintenance.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Recreational activities may include auto camping, ORV trailriding, auto touring, boating, day hiking, swimming, fishing, and hunting.

Administrative and law enforcement activities will be frequently seen in the area.

Activities, such as right-of-way maintenance, oil/gas well drilling and hydrofracturing, and oil/gas well maintenance, will occur in a portion of the area.

Table 4-12 Output Objectives for Management Area 3

Output by Management Problem	Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Opportunities			
Roaded Natural	M RVD	15 (15)	26 (26)
Dispersed Recreation Opportunities			
Roaded Natural	M RVD	480 (388)	505 (390)
Timber Management			
Hardwood Sawtimber	MMBF	30 (29)	41 (33)
Hardwood Pulpwood	MMBF	47 (45)	39 (43)
Wildlife			
Big-Game Hunting	M WFUD	110 (97)	119 (102)
Small-Game Hunting	M WFUD	23 (22)	27 (26)
Non-Game	M WFUD	23 (19)	25 (20)
Fishing	M WFUD	32 (31)	35 (29)

Table 4-13 Practices for Management Area 3

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 (D2)	Projected Decade 2 (D2)
Developed Recreation Area Construction			
Campgrounds	# of areas[1]	0 (0)	1 (1)
Dispersed Recreation-Trail Construction	miles		
Pedestrian	miles	1.2 (.6)	1.4 (.8)
Motorized-Winter	miles	1.1 (1.1)	1.1 (1.1)
Motorized-Summer	miles	12 (12)	12 (12)
Timber Practices			
Final Harvest Clearcuts	acres	292 (292)	302 (232)
Final Harvest - Shelterwood	acres	2628 (2628)	2718 (2088)
Thinning[2]	acres	8360 (8460)	6760 (9360)
Timber Stand Improvement[3]	acres	706 (606)	566 (766)
Herbicide	acres	1485 (1485)	1585 (1285)
Fertilization	acres	2256 (2256)	1156 (1056)
Fencing	acres	300 (300)	354 (354)
Planting	acres	190 (180)	180 (80)
Site Prep for Natural Regeneration	acres	1460 (1460)	1460 (1060)
Road Construction	miles	20.8 (22)	11.2 (16.5)
Road Reconstruction	miles	8.5 (9.0)	4.6 (6.7)
Wildlife and Fish Habitat Improvement			
Wildlife Habitat Improvement	acres	1176 (1176)	1541 (1389)
Wildlife Structures	# of struct.	0 (0)	6 (3)

1 Unit of measure for this practice is the number of recreation areas to be completed within the entire decade not an average annual amount.

2 The wide variation in thinning acres displayed here results from a modeling limitation caused by lumping analysis areas into 20-year age classes. The 60-year-old and 80-year-old age classes support thinnings in Decade 1 and 2, but the PNV is higher for the thinnings in Decade 1. The next cycle of planning 10 years hence will more adequately address thinning amounts in the second decade.

3 All of the acres shown for this practice are noncommercial cutting of pulpwood to complete the silvicultural prescription in commercial thinnings.

Emphasize semi-primitive non-motorized opportunities during 30 years of the 40-year cycle.

Administrative motorized vehicle use may be permitted only under emergency situations or as necessary for infrequent needs, such as construction and/or pumping vault toilets. Frequent use for routine maintenance wouldn't be permitted.

Provide roaded natural dispersed recreation opportunities during the 10-year harvesting period.

Recreation Sites

Construction of new sites may occur at development scale 1 or 2.

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks and ED&T #9099 titled "Cleaning Recreation Sites." Sites may be closed for economic or safety reasons.

Trails

*Trail management will be compatible with the ROS objective of semi-primitive non-motorized.

Trail types appropriate to this management area are:

Pedestrian Summer
Pedestrian Winter
Equestrian Summer

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation.

Trails may include two difficulty classes of More and Most Difficult to provide a range of experiences within the semi-primitive non-motorized ROS class.

Interpretation

At trailheads into the management area, personal contact, brochure racks, and bulletin boards will be utilized to interpret the environment and inform users about proper use of the area.

Emphasize the dual objective of the area and inform users what to expect when visiting the area in each management cycle.

Off-Road Vehicles (ORV)

Use of motorized vehicles off roads will not be permitted. Exceptions include use of administrative vehicles, emergency vehicles, and use authorized by permit, contract, or outstanding private rights.

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

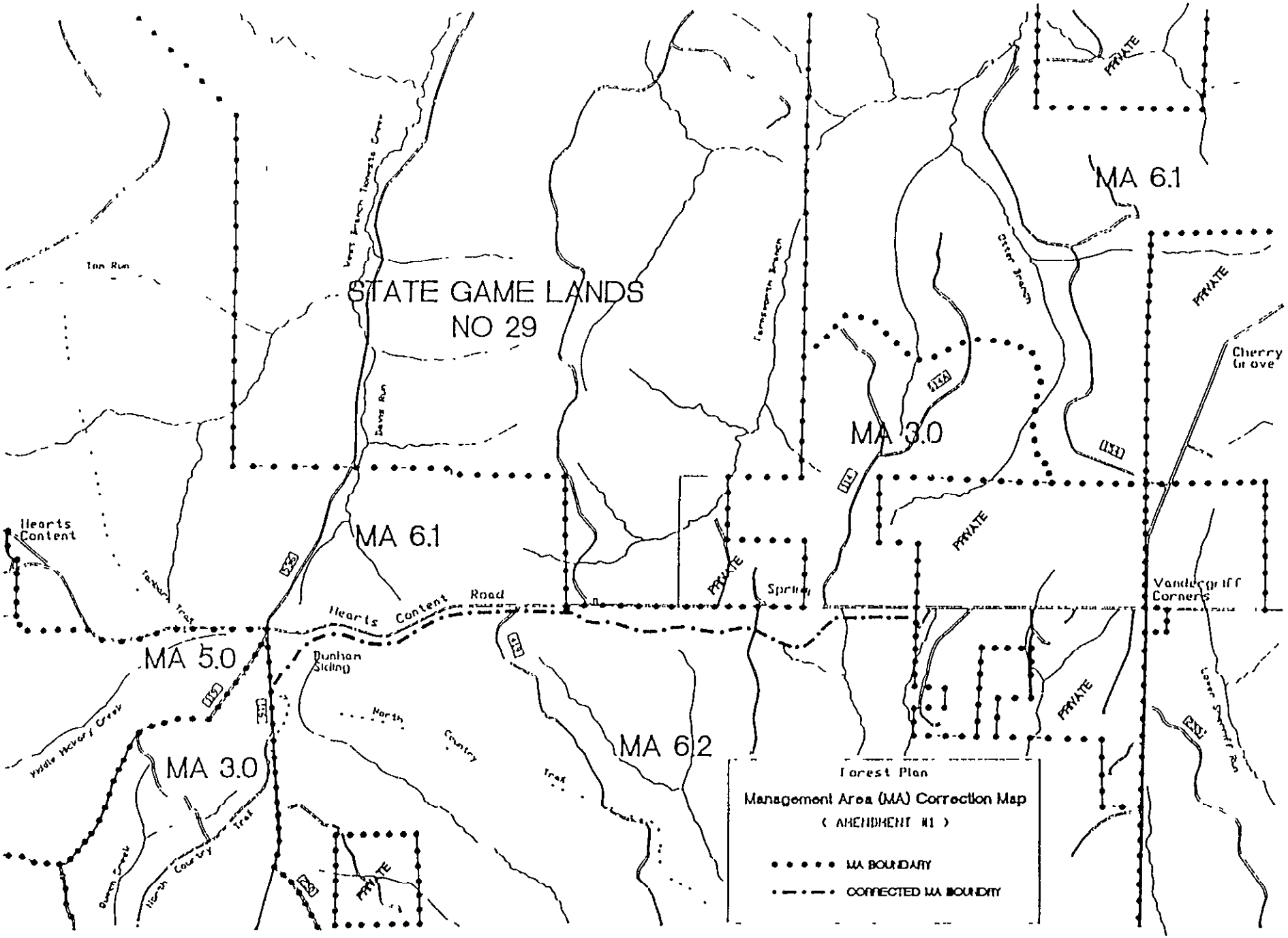
*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area.

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modificatic
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive


STATE GAME LANDS
NO 29
MA 6.1
MA 3.0
MA 6.1
MA 5.0
MA 3.0
MA 6.2
Hearts Content
Hearts Content Road
Dunham Siding
Spring
Vandergriff Corners
Cherry Grove
PRIVATE
Forest Plan
Management Area (MA) Correction Map
(AMENDMENT #1)
MA BOUNDARY
CORRECTED MA BOUNDARY

LAND AND RESOURCE MANAGEMENT PLAN

ALLEGHENY NATIONAL FOREST

Amendment No 2

May 22, 1991

Posting Notice Amendments to this Forest Plan are numbered consecutively.

Page Code	Page Color	Superseded (Number of Pages)	New
4-17	Ivory	1	1
D-15 - D-22	White	8	15

Digest

- 4-17 — Page 4-17 was revised to list both glyphosate and sulfometuron methyl as herbicides that currently best fulfill all understory vegetation management needs
- D-17 through D-22 — As amended, pages D-17 through D-22 summarize three vegetation management alternatives 1) use only glyphosate 2) use glyphosate and sulfometuron methyl, and 3) no understory control It also describes six other alternatives which were considered but eliminated from detailed study.

  The effects of implementing the three alternatives considered in detail are updated and include a discussion on human health, biodiversity, soils, vegetation, etc

  Cumulative environmental effects, connected actions and health and safety are addressed

  The use of glyphosate and sulfometuron methyl is the preferred alternative

D. ID J. WRIGHT
Forest Supervisor

Fencing

All hardwood planting areas will be fenced.

Fencing may be either woven wire, electric wire, or nylon mesh.

Fencing may be used to mitigate probable natural regeneration failures.

All regeneration areas must be reforested within five years after timber removal, therefore, fencing to protect seedlings (natural or planted) is a viable alternative in all forest types.

A stocking survey will be used to determine fencing needs. Fencing should be accomplished within one year when a stocking survey indicates a regeneration failure is likely

Fence maintenance will be done, and removal will occur after the risk of significant animal damage has passed and stand has been certified as established

Site Preparation

Most sites may require some degree of site preparation for both natural and artificial regeneration

Site preparation includes removal of unwanted vegetation or slash from the site and/or shaping of the ground surface by mechanical methods or use of herbicides.

Herbicides may be used in timber stands lacking advanced regeneration and containing dense coverage of grasses, fern, numerous beech root suckers, or striped maple stems The wildlife habitat value of key plants, such as Spring Beauty and Dog's Tooth Violet, that occur on specific sites will be considered in the evaluation process when selecting stands to be treated. Based on research and field trials, glyphosate and sulfometuron methyl currently best fulfills all management needs. Individual stand selection criteria and guidelines on application rates, time of year, and methods of application of glyphosate are provided in the Northeast Forest Experiment Station's publication titled "Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies" and the Allegheny National Forest's 1991 FEIS for Understory Vegetation Management As new information becomes available, other herbicides and/or treatment techniques may be used

Site specific environmental analyses, which include management requirements, constraints, standards, and guidelines will be prepared. (See Section 2500 Water and Soil Management for buffer strip definitions)

The use of prescribed fire to control species composition of regeneration in oak stands is being studied by the Northeast Forest Experiment Station at Irvine, Pennsylvania. Any future use of prescribed fire will be based on guidelines to be provided by the Station resulting from the study.

Fertilization

The application of nutrients through fertilization may be done to stimulate or maintain vigorous seedling growth This permits regeneration to grow above deer browse height in approximately two growing seasons. Fertilizer will be used primarily on the Allegheny hardwood forest type, since other types do not respond well to fertilization.

Nitrogen and phosphorus deficiencies in Allegheny hardwood timber stands can be corrected by the application of ammonium nitrate and triple superphosphate fertilizer. Application of such fertilizer is normally in the spring of the year shortly after leafout.

Nutrient deficient areas are not easily identified but appear to be very common in the Allegheny hardwoods type. The Northeast Forest Experiment Station and the Forest Service Reforestation Handbook (FSH 2409.26B) contain guidelines on:

1. Recognizing nutrient deficiencies
2. Fertilizer application guidelines.
3. Evaluation of degree of wildlife browsing to assist in deciding whether or not to fertilize.

Harvested areas are generally broadcast fertilized, and individual tree fertilization is done by manual methods.

Buffer zone guidelines for bodies of water, perennial streams, and intermittent streams, are contained in Section 2500, Water and Soil Management

Site Preparation for Natural Regeneration

This activity involves treating the understory vegetation and undesirable tree stems remaining after a final harvest or shelterwood cut. On the Allegheny National Forest, we generally complete this by cutting down (using a chainsaw) all stems larger than two inches in diameter which have poor form, defects, or are not the species we desire in the new stand. These stems, if left in place, will use valuable growing space, nutrients, and water which the desirable seedlings and saplings will need.

Herbicide Treatment of Interfering Understory Vegetation.

The interference of understory vegetation with the establishment and growth of tree seedlings has been recognized as a problem on the ANF for at least a decade As the forest approaches maturity, the need for a solution becomes critical.

Research projects have been conducted by the Forestry Sciences Laboratory (NEFES) in an effort to find solutions to this problem Some techniques have been applied on a semi-commercial basis on the Forest and are in commercial use by other public agencies and companies in the area

Background

When hayscented and New York fern are present beneath the overstory of a stand to be harvested, they often cause regeneration failure Such stands often have 50 to 90 percent fewer desirable seedlings Growth of these seedlings is poor, and seedlings do not usually grow above the herbaceous cover before they die Striped maple and beech suckers also occur in the understory of many hardwood stands When these species are abundant before cutting, they tend to become the dominant vegetation after cutting, crowding out desirable species of reproduction When ground covers of fern or understories of striped maple or beech are excessive, as described in the Allegheny Hardwood Handbook, action should be taken to reduce the amounts of these plants before cutting so that satisfactory regeneration of the stand can be obtained.

We estimate that half of the Forest contains restrictive quantities of fern, striped maple, and/or beech suckers On these areas, it is not possible to regenerate the

Forest with either even-aged or uneven-aged silvicultural prescriptions. Vertical diversity is lacking in the understory. This means there is less food and less cover for wildlife species.

The current situation results from a combination of factors. Selective browsing by large deer herds has drastically reduced or eliminated tree seedlings on many sites. Since fern, striped maple, and beech are not preferred deer food, they often survive and dominate the understory. Once established, these weed species are able to survive and interfere with reproduction of desirable tree species for an indefinite period of time. (For example, orchard stands and savannahs have been dominated by herbaceous plants for nearly 60 years). Reductions in deer population, shading of overstory, and similar ecological factors do not seem to reduce them enough to permit seedling regeneration. Some form of direct control of the undesirable plants is required. Control measures must be accepted during the 5 to 10 year period prior to harvest cutting in even-aged stands and immediately prior to each periodic harvest cutting in uneven-aged stands

Alternatives Considered in Detail

1. Use Only Glyphosate

Continue to carry out understory treatment technology which was the local state-of-the-art when the Forest Plan was approved in 1986. It is the specific understory technique approved in the Forest Plan (Alternative D) until new and better understory management technology emerges In this alternative, only glyphosate would be considered for use in future site-specific analyses This alternative was considered in the Forest Plan and in the Understory Vegetation Management EIS.

2 Use Glyphosate and Sulfometuron Methyl

Permit Forest personnel to consider using both glyphosate and sulfometuron methyl during the site-specific analysis process. These herbicides may be used in combination or individually, depending on the vegetation present on the site This alternative was only considered in the Understory Vegetation Management EIS

1 No Understory Control

As timber stands attain maturity, regeneration through clearcutting, shelterwood cutting, or selection cutting would be prescribed where understory conditions would permit such action. Where fern, striped maple, and/or beech dominated the floor beneath mature stands, regeneration would be deferred indefinitely. This alternative was only considered in the Forest Plan.

Other Alternatives Considered but Eliminated

Prescribed fire, mechanical control, and the use of other herbicides were considered but eliminated from detailed analysis in both the Forest Plan and the Understory Vegetation Management EIS The fencing only alternative, the use of glyphosate and sulfometuron methyl on all sites, and the sulfometuron methyl only alternative were considered but eliminated from detailed study in the Understory Vegetation Management EIS

1 Eliminate Ferns, Striped Maple Grass and Beech Suckers by Prescribed Burning

Reason Prescribed burning is the planned use of fire It can be used to reduce understory competition, thus allowing desirable seedlings to become established in the understory Factors evaluated when using prescribed fire include fuels (quantity, type, distribution, moisture content), topography (ruggedness, elevation slope), weather (temperature wind, humidity) and time of year. With the light fuel loads and typical moisture regimes on the Forest, it is difficult to have all required conditions concurrently present to achieve a satisfactory burn, a conclusion reached in the Forest Plan

Research has shown that striped maple and beech can be controlled with fire, however two to three burns in successive years are needed to produce adequate control A single burn does not reduce the cover of any of these plants and may actually stimulate it.

Fire does not provide adequate control of ferns. A single burn will consume the current hayscented fern foliage but also damages the underground fern rhizome and releases dormant buds New rhizomes that develop from these buds produce foliage which will quickly result in a dense ground cover where previously only a few fern fronds were present

Fire cannot be used to control grasses. Both single and repeated burns stimulate the germination of buried grass seed. Growth is actually stimulated since burning releases nitrates which promote growth.

Fire use, however, has several limitations on the Allegheny Plateau. First, the number of burning days are limited. During the 10-year period from 1960 to 1969, the Allegheny National Forest averaged only 8.5 days per year when wildfires occurred. Between 1977 and 1986, the average was 6.5 days per year. During the period between 1960 and 1969, forests where prescribed burning is used averaged 50 to 97 days per year when fire occurred.

Second, the Allegheny hardwood forest, the major timber type, does not develop a fuel accumulation large enough to sustain fires in each of three successive years. Thus, despite the potential effectiveness of fire as a weed control tool, it has limited value for a large scale program like understory control

Third, burning would not protect existing intermingled tree seedlings.

2. Eliminate Ferns and/or Grasses by Manual or Mechanical Methods

Reason: This includes using powered or non-powered tools to cut or mow these species found within the understories. Non-powered tools are axes, brush hooks and hand clippers Powered tools include chain saws, tractors with plows, and motorized brush cutters. Manual cutting tools sever vegetation above the ground line; soil is seldom disturbed

Manual methods have been evaluated by the Northeastern Forest Experiment Station at Irvine PA and have been found not practical or ineffective on the Allegheny Plateau Ferns can be controlled mechanically by plowing during the growing season or by mowing two to three times per year for two to three successive years.

Plowing is difficult because of interfering terrain, rocky soil, and interfering tree roots and stems, common to a forest setting. It also damages tree roots, which makes it undesirable to use Mowing is similarly difficult to accomplish All of these techniques are

labor intensive and prohibitively expensive for treating fern tracks. Mechanical methods or physical disturbances do not help control grass but they actually increase its abundance on the forest floor None of them would protect existing seedlings or overstory trees. This restates another decision reached in the Forest Plan

3. Use Fencing Alone on All Sites to Establish Tree Seedlings (Eliminate the Need to Use Herbicides)

Reason: Fencing alone will not provide the ground conditions to allow tree seedlings to become established where interfering understory vegetation is the problem There needs to be an adequate amount of light reaching the ground to allow seedlings to grow and become established. Competing understory vegetation intercepts this light and prevents it from reaching tree seedlings Fencing is most effective where tree seedlings already exist and are of such a size that they are taller than any existing understory vegetation and are only being hindered by deer browsing Fencing is used alone when conditions are right for its use

Fern tracks, if left in place will spread and completely recover an area regardless of whether the area is or is not fenced Tree seedlings will not grow through these ferns

4 Use Only Sulfometuron Methyl in the Herbicide Program

Reason. The degree of vegetation control for any herbicide varies according to species species susceptibility, and height Sulfometuron methyl effectively controls only ferns some species of existing grass, and many species of grass and sedge just after the seed germinates but before the leaves emerge above the ground It is not effective in controlling woody vegetation such as striped maple or beech nor is it labeled for such use Therefore, it would be inappropriate and inconsistent with the herbicide label to consider using only sulfometuron methyl where the target vegetation includes woody vegetation

5 Use Other Herbicides

Reason Use of an herbicide other than glyphosate or sulfometuron methyl (or a mixture of the two) is not recommended at this time These are the only herbicides that local evaluation has shown to be most applicable to

all target species, to be least costly, to meet soil water, health, and safety criteria, and that can be applied over the expected acreage needing treatment Prior to operational use, efficacy of these herbicides was evaluated through research and administrative studies on small areas.

Other herbicides considered in the Forest Plan but recommended for understory control on the Allegheny National Forest are bromacil, dicloram, simazine, hexazinone, oryzalin, napropamide, diuron, flourochloridone, and terbacil. They were evaluated by the Forestry Sciences Laboratory for 1) efficacy, 2) economics of use, 3) potential hazards to the public, applicators and Forest Service employees, and 4) whether they have an Environmental Protection Agency (EPA) registration for forestry use.

Future research may identify a new or better herbicide that could be proposed for use on the Forest or more practical alternative treatment techniques If this happens, Forest personnel will conduct an analysis and before it can be used on the Allegheny National Forest document the findings in a supplement to the EIS which includes an analysis of possible impacts to human health, the environment and non-target organisms.

6. Use Glyphosate/Sulfometuron Methyl Combination for the Entire Forest-wide Herbicide Program

Reason: With this alternative the only treatment future site-specific analyses would consider is a mixture of glyphosate and sulfometuron methyl. There would be no option to consider using either herbicide by itself. This herbicide combination effectively controls fern, grasses, beech and striped maple but glyphosate also eliminates any tree seedlings present in the stand Each herbicide controls specific types of vegetation, and there is no need to apply a specific herbicide if the specific type of vegetation it controls is not present on the site. In addition, glyphosate should not be used in those stands where it is desirable to retain existing tree seedlings.

Effects of Implementing the Alternatives Considered in Detail

Effectiveness

Results of 1987 through 1990 spray programs on the Forest show that glyphosate effectively controls striped maple, beech root suckers, grass that has already germinated at the time of spraying and ferns without broken stems. It does not control grass which germinates from seed following spraying or ferns which grow from small pieces of rhizome that have been broken off by spray vehicle tires or tracks. Based on recent local research findings, sulfometuron methyl provides these last two types of control

Furthermore, glyphosate and sulfometuron methyl have been used operationally in an herbicide-shelterwood sequence by Hammermill Paper Company, Tg Forest Products, the Pennsylvania Department of Environmental Resources, and the Pennsylvania Game Commission These companies and agencies have made a substantial financial investment in equipment to carry out this work Moreover, both chemicals have been approved for forestry use by the Pennsylvania Department of Agriculture and the U S Environmental Protection Agency

The environmental effects are summarized below for the three alternatives considered in detail. Under the no understory control alternative, there would be no effect on soils, water quality, air quality, cultural resources minerals, human health or recreation The no control alternative does, however, effect biodiversity, vegetation, visuals, wildlife, and socioeconomics.

Soils: When glyphosate reaches the soil it is completely and rapidly degraded by microbial activity within the soil environment, glyphosate is resistant to chemical degradation, stable to sunlight and relatively non-leachable It strongly adsorbs to soil particles and has a minimal effect on soil microflora. It does not bioaccumulate in the soil and has no tendency to leach through the soil or to run off

In the soil environment, sulfometuron methyl is broken down by the addition of water under acid conditions and by soil microorganisms It does not bioaccumulate in the soil. It does not adsorb to soil particles as strongly as glyphosate

A potential indirect effect to soils is compaction and erosion caused by the skidder or tractor used during application, but this impact would be mitigated through a pre-treatment examination of sensitive soils by a soil scientist to determine the appropriate equipment to use

Water Quality: The Forest Plan provides buffer zones along perennial and intermittent streams, seeps and springs. Two years of water quality monitoring have shown that these buffer zones are adequate for keeping herbicides out of streams, seeps and springs.

Neither herbicide would move through the soil and into the groundwater. Glyphosate adsorbs strongly to soil particles, rarely penetrating the soil surface. Sulfometuron methyl may move several inches into the rooting zone but would be broken down by hydrolysis.

Air Quality: Because both glyphosate and sulfometuron methyl have a low volatility, are being applied from the ground and are being applied in relatively small amounts, effects on air quality would be minor, short-term and localized. Likewise, neither herbicide is expected to add a significant contribution to acid precipitation.

Cultural Resources: Cultural resource surveys would be conducted in all areas prior to herbicide treatment Identified sites will be evaluated and protected as appropriate.

Minerals The effect of herbicide treatment on mineral resources is limited to the potential to rupture oil and gas pipelines Whenever possible, pipelines are avoided by applying herbicides parallel to them

Human Health: Potential herbicide effects on human health are analyzed in the Understory Vegetation Management FEIS, Appendix A - Human Health Risk Assessment. The Margin of Safety comparisons show that planned use of glyphosate and sulfometuron methyl should not affect any member of the public including sensitive individuals.

With either chemical, there is a slight chance that a sensitive worker could experience some temporary effects in the maximum exposure situation but the potential of this happening is very low.

Neither glyphosate nor sulfometuron methyl is known to contain a carcinogen, and the risk of teratogenic, mutagenic and reproductive effects is negligible

Biodiversity: Neither glyphosate nor sulfometuron methyl are expected to adversely affect natural ecological processes. Reducing the acreage of fern monoculture, coupled with a balanced deer herd would allow scarce plant associations to become more numerous. Viable populations of all plant and animal species will be maintained. Minor shifts in species composition of shrews, mice, and voles could occur but would not affect predators such as snakes and owls. Herbicide treatments are not expected to cause any direct habitat fragmentation.

Under the no control alternative, fern monocultures would remain on about half of the Forest Biodiversity would remain low particularly in relation to understory vegetation.

Vegetation: Herbicide treatment would not have a direct effect on overstory vegetation However, using herbicides helps the Forest make significant progress towards achieving the desired future condition for vegetative age class structure as specified in the Forest Plan. Herbicides aid tree seedling, shrub, and forb establishment and growth which allows the Allegheny National Forest to establish younger, more diverse, forested areas.

Competing understory vegetation would be controlled. Herbicide treatment would increase understory vegetation diversity the growing season following application. Abundant tree seedlings, shrubs, and forbs would have the opportunity to develop However, if using glyphosate only, treated areas would have to be retreated in subsequent years to stop the spread of ferns from fern tracks

Under the no control alternative, fern monocultures would continue to hinder the establishment of tree seedlings, shrubs, and forbs About half of the Forest would lack tree seedlings and a shrub component.

Recreation and Visual For both glyphosate and sulfometuron methyl, treated vegetation would turn brown and die in two to four weeks Recreation use may be displaced from the time of treatment until mid October.

Another visual impact is the bright yellow notification signs stapled intermittently to trees at selected points along the boundary of the treatment areas.

Under the no control alternative, large areas of farn would provide a visually pleasing landscape for some people.

Wildlife, Fish, and Endangered Species: The Wildlife and Aquatic Species Risk Assessment (Understory Vegetation Management EIS, Appendix C) shows that there is no significant risk to wildlife or aquatic species exposed to either glyphosate or sulfometuron methyl. Studies have shown high elimination rates and low tissue retention for both herbicides, indicating a very low risk of bioaccumulation.

Since herbicide treatments are usually followed by a series of even-aged silviculture treatments, the long-term impact is an increase in wildlife species diversity, vegetative age class diversity, vertical and horizontal diversity. Early successional wildlife species are favored.

Under the no control alternative, the lack of a mid-story layer of vegetation would reduce vertical diversity important for neotropical migrants and a variety of forest wildlife.

To fully comply with the Endangered Species Act, a biological assessment for threatened and endangered species was prepared and submitted to the USDI-Fish and Wildlife Service. They concurred with the assessment and responded with a biological opinion.

Socioeconomic: An annual program close to 2,000 acres using glyphosate only would cost from $12,000 to $46,000 more than using both herbicides, depending on the characteristics of the sites treated. The average annual difference would be close to $20,000.

Using glyphosate only could result in a significant reduction in returns to the U.S. Treasury and payments to counties over the long term, depending on the number of acres affected by both oak mortality and fern/grass interference. Local employment could also be reduced, but all of these effects are difficult to quantify.

No control would result in an even greater reduction in returns to the U S Treasury and payments to counties over the long term, since timber harvest would not occur over large areas of the Forest. Local employment would be reduced. These effects would be significant but are difficult to quantify

Cumulative effects and connected actions are summarized as follows.

Soils: Glyphosate is quickly degraded by microbiological activity, so there is no build-up in the soil. Sulfometuron methyl is broken down by water under acidic conditions and by soil microorganisms and sunlight. Therefore, there are no direct cumulative effects to soils from either herbicide.

Indirect cumulative effects to soils could occur as a result of timber harvest (connected action) following herbicide treatment. More soil compaction could occur as a result of road building (connected action) and timber harvesting following herbicide treatment.

Water: There would be no direct cumulative effect on water, provided that the standards and guidelines in the Forest Plan are followed The herbicide would not leach into the groundwater or run off into streams.

Indirect cumulative effects include a potential increase in sedimentation from timber harvesting and road building (connected actions)

Cultural Resources Neither herbicide treatment would lead to any cumulative effects on cultural resources, given the requirement that areas be surveyed for cultural resources prior to project implementation and that mitigation measures be incorporated as presented by a professional archaeologist

Minerals Except for the remote possibility of rupturing a pipeline, there are no effects on minerals Herbicide application does not prevent the removal of minerals (connected action) from any particular site by the subsurface owner

Biodiversity: The cumulative impact to biodiversity would be a shift in wildlife species to favor early successional species in Management Area 3 0 in

accordance with the Forest Plan viable populations of all plant and animal species would be maintained

Habitat fragmentation would occur as a result of road building and timber harvest (connected actions). This fragmentation and its affects on interior species, however, would occur mainly in Management Area 3.0 and other Management Areas would meet the habitat needs of interior species

Human Health: Cumulative effects to human health are not likely to occur because none of the herbicides are persistent in the environment or in the human body

Vegetation: Up to 16,000 additional acres could be treated with herbicides by the end of 1995. The cumulative effect of vegetation would be a reduction of fern, striped maple, beech brush, and grasses and an increase in tree seedlings and other herbaceous understory species As the overstory trees are harvested (connected action) on this 16,000 acres, the indirect cumulative effect would be a significant improvement in age class diversity With no control, large acreages would remain as a fern monoculture indefinitely.

Recreation: No direct cumulative effects would occur to dispersed or developed recreation Indirect cumulative effects to recreation could occur as a result of timber harvest (connected action) following herbicide treatment.

Timber harvesting would change the existing landscape character to a mosaic of patterns colors and textures on the landscape Such changes would conform with the recreation opportunity spectrum (ROS) described in the Forest Plan.

Under the no control alternative, the vast areas of fern would remain indefinitely with little change in the landscape.

Wildlife, Fish and Endangered Species: Since neither glyphosate nor sulfometuron methyl bioaccumulates in animal tissues, there are no direct cumulative effects on wildlife, fish or endangered species

The indirect cumulative effect on wildlife habitat would be a significant increase in vegetation age class diversity. Habitat for early successional species would increase as timber harvest (connected action) follows herbicide treatment. Habitat improvements (connected action) directed toward featured species would provide significant benefits to wildlife populations and help maintain a balance between animals numbers and habitat capability.

Under the no control alternative, timber harvest would be severely limited resulting in a forest of old and decadent trees with few new tree seedlings in the understory. Habitat would favor late successional species and neotropical species.

Synergistic Effects: Based on available data, it is possible, but quite unlikely, that synergistic effects could occur as a result of exposure to glyphosate and sulfometuron methyl

Safety and Health

The table on the following page compares the toxicity of glyphosate and sulfometuron methyl to other selected herbicides and to aspirin and table salt. Both herbicides are less toxic than aspirin or table salt and are registered for use on agricultural crop lands.

Roundup® (glyphosate) is classified as only slightly toxic by oral ingestion with an acute LD_{50} (lethal dose to 50 percent of the population when given as a single dose) to rats of 4,320 mg/kg of body weight (indicates low toxicity), and an oral LD_{50} of 4,900 mg/kg of body weight (indicates low toxicity) Roundup is classified as practically nontoxic by skin contact since rabbits survived single dermal dosages greater than 7,940 mg/kg of body weight

Oust® (sulfometuron methyl) is classified as very slightly toxic with an acute LD_{50} to rats of more than 5,000 mg/kg of body-weight

More information is available in Appendix A - Human Health Risk Assessment, Understory Vegetation Management EIS.

Acute Toxicity Classification and Acute Toxicities of Herbicides, Additives, and Formulations Being Evaluated for Use in Vegetation Management in Relation to Other Chemicals

Toxicity Category[1] (Label Signal Words)	Herbicide or Other Chemical Substance	Oral LD_{50} for Rats (mg/kg)	Equivalent Human Dose
IV Very slight		5,000-50,000 (range)	More than 1 pint
	Sugar	30,000	
	Ethyl alcohol	13,700	
	Sulfometuron Methyl	> 5,000	
	Oust®	> 5,000	
	Accord® [2]	> 5,000	
	Rodeo® [3]	> 5,000	
	Valent X-77® [4]	> 5,000	
III Slight (caution)		500 - 5,000 (range)	1 ounce to 1 pint
	RoundUp®	4,900	
	Glyphosate	4,320	
	Table Salt	3,750	
	Bleach	2,000	
	Aspirin, Vitamin B3	1,700	
II Moderate (warning)		50-500 (range)	1 teaspoon to 1 ounce
	Caffeine	200	
I Severe (danger-poison)		0-50 (range)	1 teaspoon or less
	Nicotine	50	
	Strychnine	30	
	Botulinus Toxin	0.00001	

1 Categories, signal words, and LD_{50} ranges are based on a classification system used by EPA for labeling pesticides

2 Monsanto MSDS 1987

3 Monsanto MSDA 1985

4 Valent U.S.A. Corporation 1989

Source: Maxwell (1982) (as cited in Walstad and Dost, 1984)

Preferred Alternative

Glyphosate and sulfometuron methyl - This alternative should be preferred over all others listed, in most cases. It allows Forest personnel to consider using both glyphosate and sulfometuron methyl during the site-specific analysis process. This alternative provides more effective treatment of fern tracks (ferns that are broken off by the applicator's equipment) and grass seed banks.

It is the most effective, is applicable to all target species, is least costly, meets soil, water, health, and safety criteria, and could be applied over the expected acreage needing treatment.

Future research may identify a better herbicide to use here or more practical alternative treatment techniques. If this happens, we will evaluate their appropriateness and consider changing Forest-wide control methods for understory vegetation.

The Allegheny National Forest Herbicide Policy

Herbicides will be used to carry out silvicultural prescriptions as indicated in site-specific project EAs This does not, however, preclude the use of other practices (i e , planting, fencing, mechanical control, or fire) if the project EA shows them to be acceptable for existing on-site conditions. In addition, we will consider for future use, any new methods of stand regeneration which prove to be safe, economical, and biologically feasible

LAND AND RESOURCE MANAGEMENT PLAN

ALLEGHENY NATIONAL FOREST

Amendment No. 3

June 28, 1991

Page Code	Page Color	Superseded (Number of Pages)	New
4-8	Ivory	-1	1

Digest:

p. 4-8 Paragraph 6 was revised to include a reference to Forest Service Handbook (FSH) 2309.8, on Trail Management, as amended in June 1985.

The paragraph under subheading "1. Motorized Summer" was revised to include a summary of standards for Motorized Summer Trail, as listed in FSH 2309.8.

DAVID J WRIGHT
Forest Supervisor

NEPA Process

Future environmental analyses (EAs) and environmental impact statements (EISs), will be tiered to the Forest Plan and EIS. Environmental Analyses and/or documentation of project level actions will address the site specific issues and concerns within the scope of the Forest Plan, EIS, and record of decision.

2100 ENVIRONMENTAL MANAGEMENT

Air Quality

If air quality problems affecting forest resources are identified through monitoring resource conditions or through research, mitigation will be sought through coordination with the state regulatory agency.

*Pesticide Use

*Use only pesticides registered by the Environmental Protection Agency (EPA) in full accordance with the Federal Insecticide, Fungicide, Rodenticide Act as amended, except as other wise provided in regulations, orders, or permits issued by the EPA. In addition, certain pesticide uses require Regional Forester approval.

2300 RECREATION MANAGEMENT

Recreation Opportunities

*Road development and management will conform to the appropriate recreation opportunity spectrum class (ROS).

Recreation Sites

The needs of handicapped persons will be considered in the construction and rehabilitation of recreation sites.

Trails

*Management of National Scenic Trails and adjacent lands will be compatible with standards incorporated in the act establishing the trail and in the trail management plan.

*National Recreation Trails will be managed in accordance with the commitments associated with their designation.

The standards and guidelines for each management area will specify which of the following trail types to be appropriate:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

Multi-purpose trails will be encouraged. Trail design may include three difficulty classes to provide a full range of experiences. Emphasis on difficulty may also vary by management area.

Easiest - Accommodate moderate to heavy traffic on a safe and well-marked trail.

More Difficult - Accommodate moderate use on a trail which is safe for those users with backcountry experience and good physical ability.

Most Difficult - Accommodate low volume of users seeking to test their skills in rugged terrain. Route should appear challenging and require good physical conditioning.

Trails will be constructed and maintained to the Trails Management Handbook 6/85 design standards. Maximum trail grades, tread widths and clearing widths vary according to terrain and difficulty level. Low ranges are for the easy class of trails, and high for the most difficult. The Handbook standards are summarized as follows:

1. Motorized Summer:

   Maximum sustained grades will vary from 15 to 30 percent, with short pitches up to 50 percent. Tread width ranges from 58 to 85 inches for ATV trails and 12 to 30 inches for motorized bike trails. Clearing width varies from 7 to 13.5 feet (including tread width), and clearing height from 5 to 8 feet.

2. Pedestrian Summer:

   Maximum grades will vary from 20 percent to 50 percent, clearing width 3-4 feet, clearing height 8 feet, tread width 24 inches.

3. Equestrian Summer:

   Maximum grades will vary from 10 percent to 30 percent, clearing width 6 feet, clearing height 10 feet, tread width 24-30 inches.

ALLEGHENY NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

October 4, 1994

Amendment No. 4

Posting Notice: Amendments to this Forest Plan are numbered consecutively. Check the last transmittal received for this Plan to see that the above amendment is received and posted. Do not post this amendment until any missing ones are received and posted

Digest of changes: Amendment No 4 makes the following changes to the pages specified.

Page	Location	Change
p 4-55	Table 4-5	Changes M acres assigned to Management Area 3 to *328* and M acres assigned to Management Area 6.1 to *103*
	Paragraph 1	Changes 503,000 acres to *506,000*
p 4-82	Heading	Changes 327,000 acres to *328,000*
p 4-110	Heading	Changes 101,000 acres to *103,000*
p 4-169	Heading	Changes 6,000 acres to *6,200*
	Paragraph 1	Following "Kane Experimental Forest (1,650 acres)," adds "*and Buckaloons Historic District (300 acres)*. Except for the scenic areas *and the Buckaloons Historic District*, the activities are administered by the Northeastern Forest Experiment Station"

In an effort to reduce duplication and mailing costs for the minor changes made to pages 4-55, 4-82 and 4-110, we ask that you make the appropriate acreage changes in your copy of the Forest Plan

We are enclosing a copy of revised page 4-169 (tan) which replaces that same page in your copy of the Forest Plan In addition, we are including Area Maps which identify the 12 parcels of land added to the Forest (refer to the Decision Memo for specific Management Area assignments)

JOHN E PALMER
Forest Supervisor

4/30/94
Date

Description for Management Area 8 (6,200 acres)

The emphasis in this management area is management of four special areas on the Forest: Tionesta Scenic Area (2,018 areas), Tionesta Research Natural Area (2,113 acres), Hearts Content Scenic Area (122 acres), Kane Experimental Forest (1,650 acres), and Buckaloons Historic District (300 acres). Except for the scenic areas and Buckaloons Historic District, the activities are administered by the Northeastern Forest Experiment Station.

The primary purpose for Hearts Content Scenic Area and Tionesta Scenic Area is to:

- Protect the unique areas of national significance and provide dispersed recreation opportunities that emphasize the area's uniqueness
- Preserve the unique ecosystems for scientific purposes.

The primary purpose for Tionesta Research Natural Area is to:

- Preserve the unique ecosystem for scientific purposes.

The primary purpose for Kane Experimental Forest is to:

- Provide an area where we will conduct research to improve the benefits of forests.

The areas encompass many vegetative types from open fields to virgin timber stands.

State, township, and Forest Service administered arterial and collector roads may be located within this management area. Forest Service local roads, Traffic Service Level (TSL) "C & D", will be closed to all public traffic except for certain exceptions for recreation purposes.

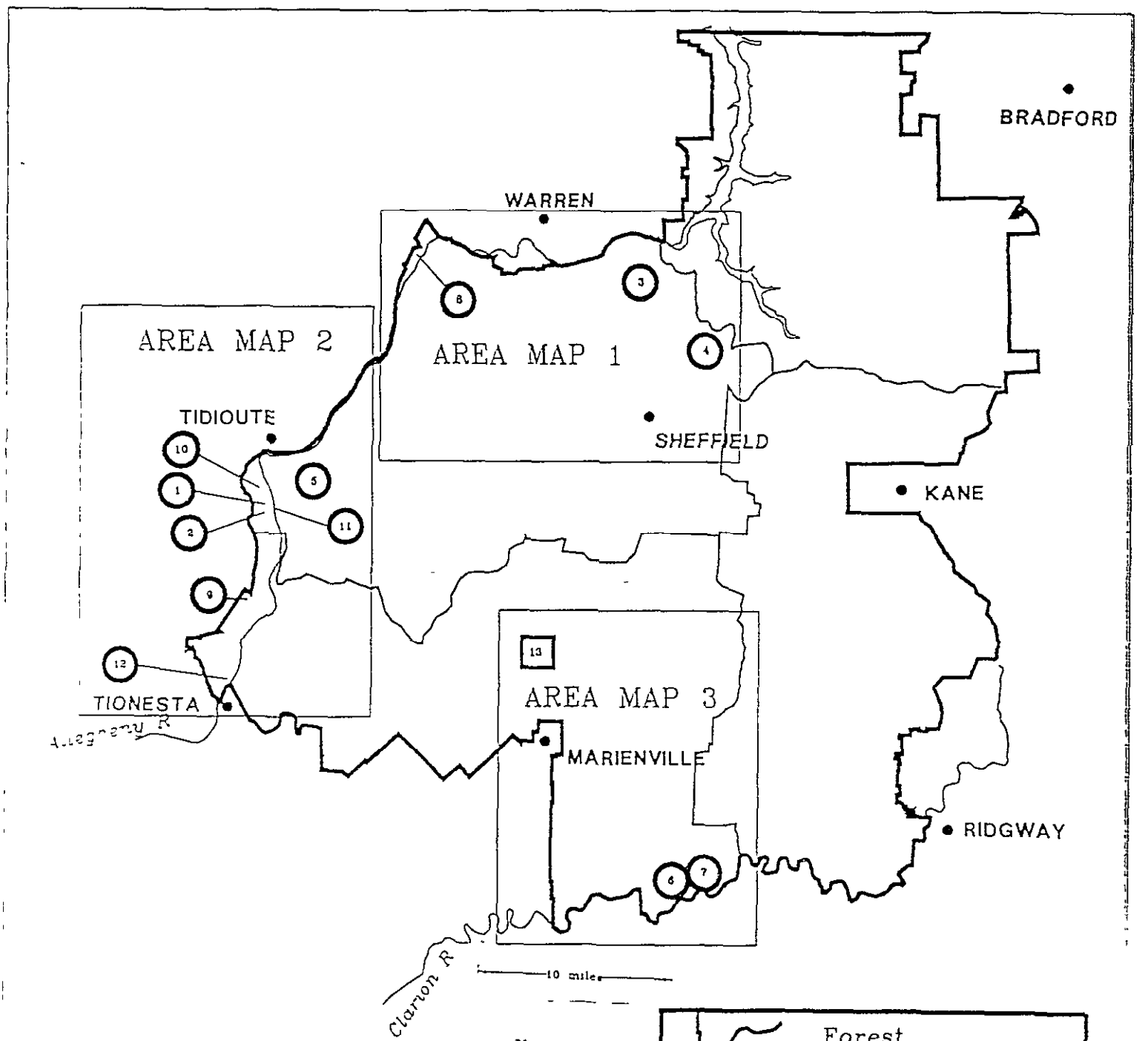
Recreational facilities and structures may be present but generally designed to be compatible with the natural surroundings. Facilities could range from primitive structures to highly developed sites, except in the Kane Experimental Forest and Tionesta Research Natural Area where none will exist.

Recreation and use will vary, from substantially unnoticeable to very evident. Evidence of human activities will vary depending on the area's purpose, but activity generally will be controlled to reduce adverse impacts on the sites.

Administrative activities could include timber, wildlife, and recreation management functions. The unique characteristics of these areas require that they be protected by law or administrative order. Law enforcement and associated administrative activities may be common within the areas.

FOREST MAP

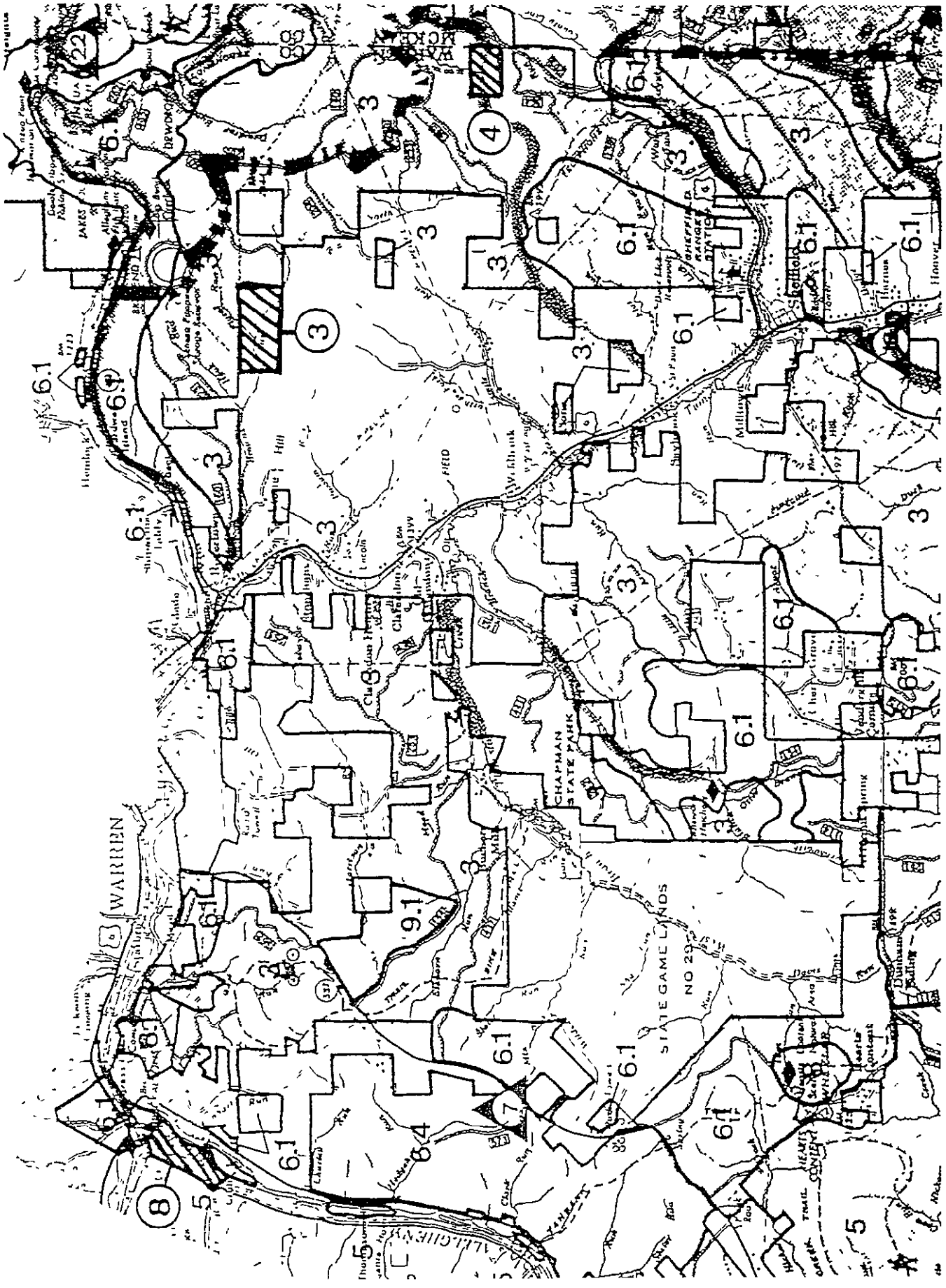
(with area map insets)



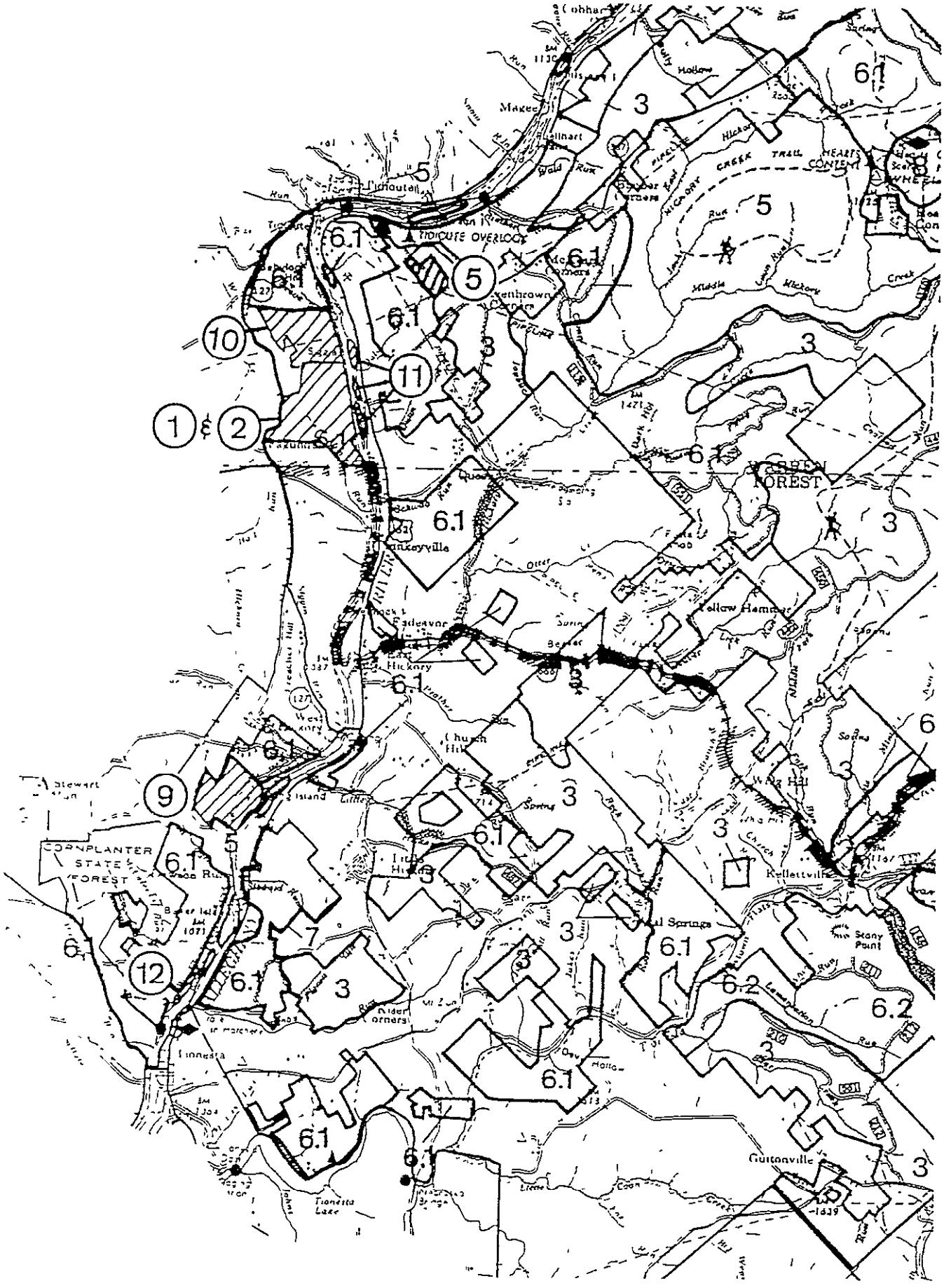
MANAGEMENT AREA ALLOCATIONS

MA	Tract #s
3 0	3 and 4
6 1	1, 2, 5 - 7, 9 - 12
8 0	8

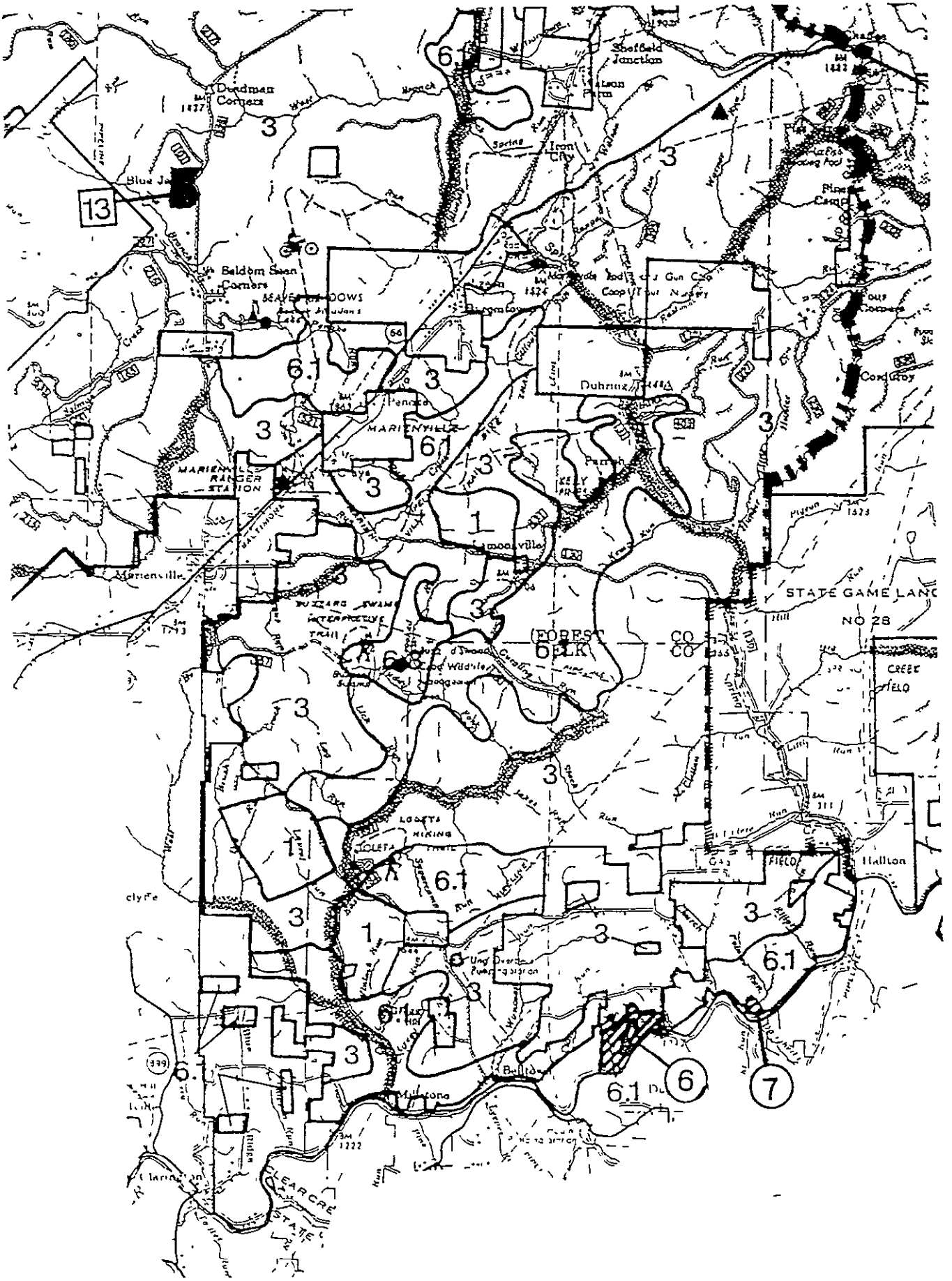
AREA MAP 1


WARREN
CHAPMAN STATE PARK
STATE GAME LANDS NO 295
Sheffield
6.1
3
9.1
8.4

AREA MAP 2


1 & 2
5
10
11
9
12
6.1
3
5
6
7
6.2
CORNPLANTER STATE FOREST
ALLEGANY STATE PARK
Limestone
Kellettville
Guiltonville
Yellow Hammer
Hickory
Church Hill
Little Hill
Oil Springs
Stony Point
Tidioute Overlook

AREA MAP 3


Deadman Corners
Sheffield Junction
Iron City
Blue Jay
Baldom Swan Corners
Beaverdam Woods
Bloomfield
Duhring
Pine Camp
Corduroy
MARIENVILLE
MARIENVILLE RANGER STATION
Marienville
Pennco
Kelly Pines
Moodyville
Baltimore
Pigeon
Thunder
Tionesta
Tionesta Creek
Buzzard Swamp Interpretive Trail
Loleta Hiking Trail
Loleta
Stevenson Run
Ung Overlook Picturesque Point
Mayburg
Hallton
Clarington
Clarion River
Clearfield Creek State Park
STATE GAME LAND NO 28
FOREST CO
ELK CO
CREEK FIELD
FIELD
6
7

ALLEGHENY NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

November 25, 1996

Amendment No. 5

Posting Notice: Amendments to this Forest Plan are numbered consecutively. Check the last transmittal received for this Plan to see that the above amendment is received and posted. Do not post this amendment until any missing ones are received and posted.

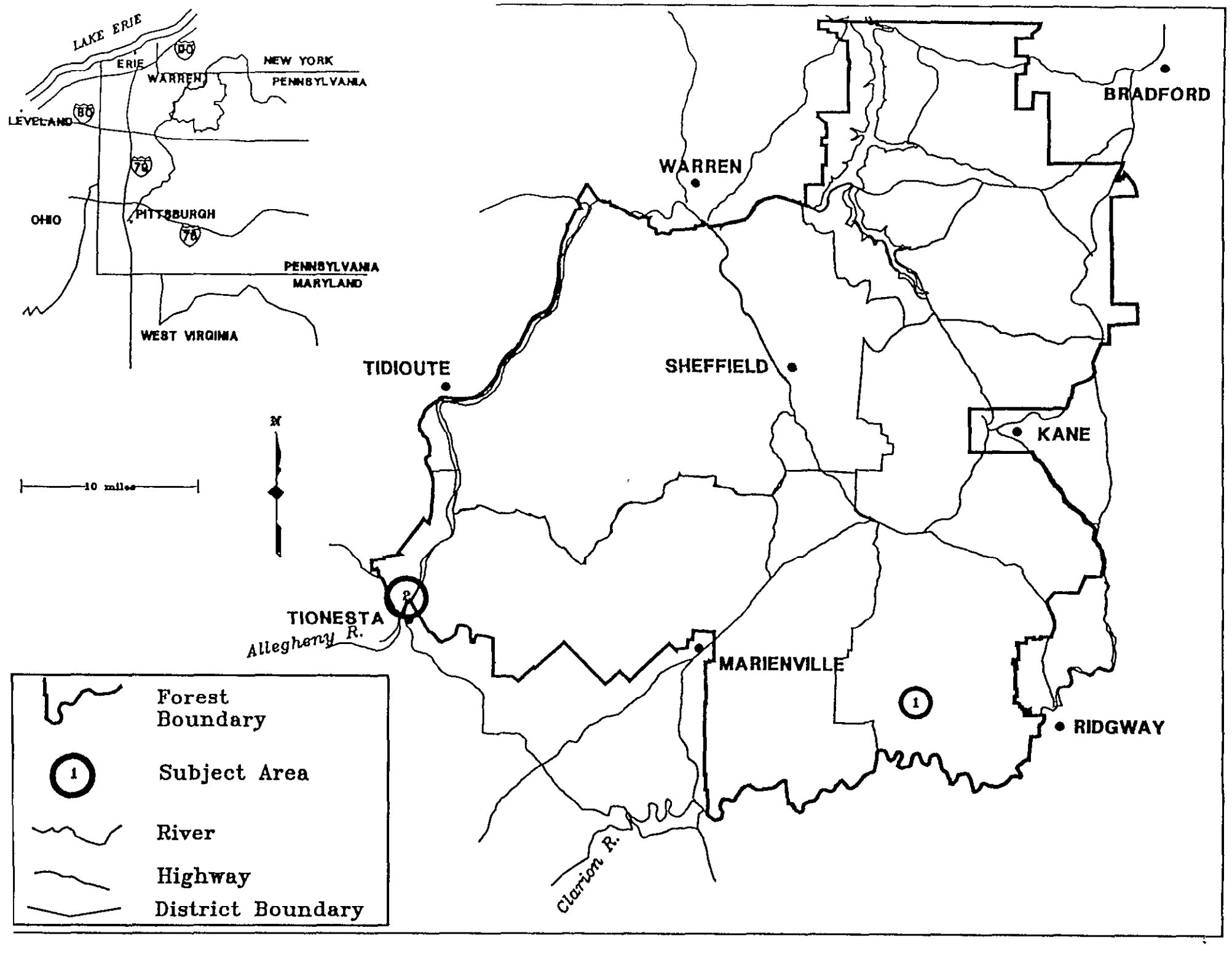
Digest of changes: Amendment No 5 makes the following change to the page specified.

Page	Location	Change
p 4-110	Heading	Changes 103,000 acres to ***103,036***

In an effort to reduce duplication and mailing costs for the minor changes made to page 4-110, we ask that you make the appropriate acreage changes in your copy of the Forest Plan

In addition, we are including Area Maps which identify the parcel of land added to the Forest as well as the 69-acre parcel that had been removed from National Forest ownership

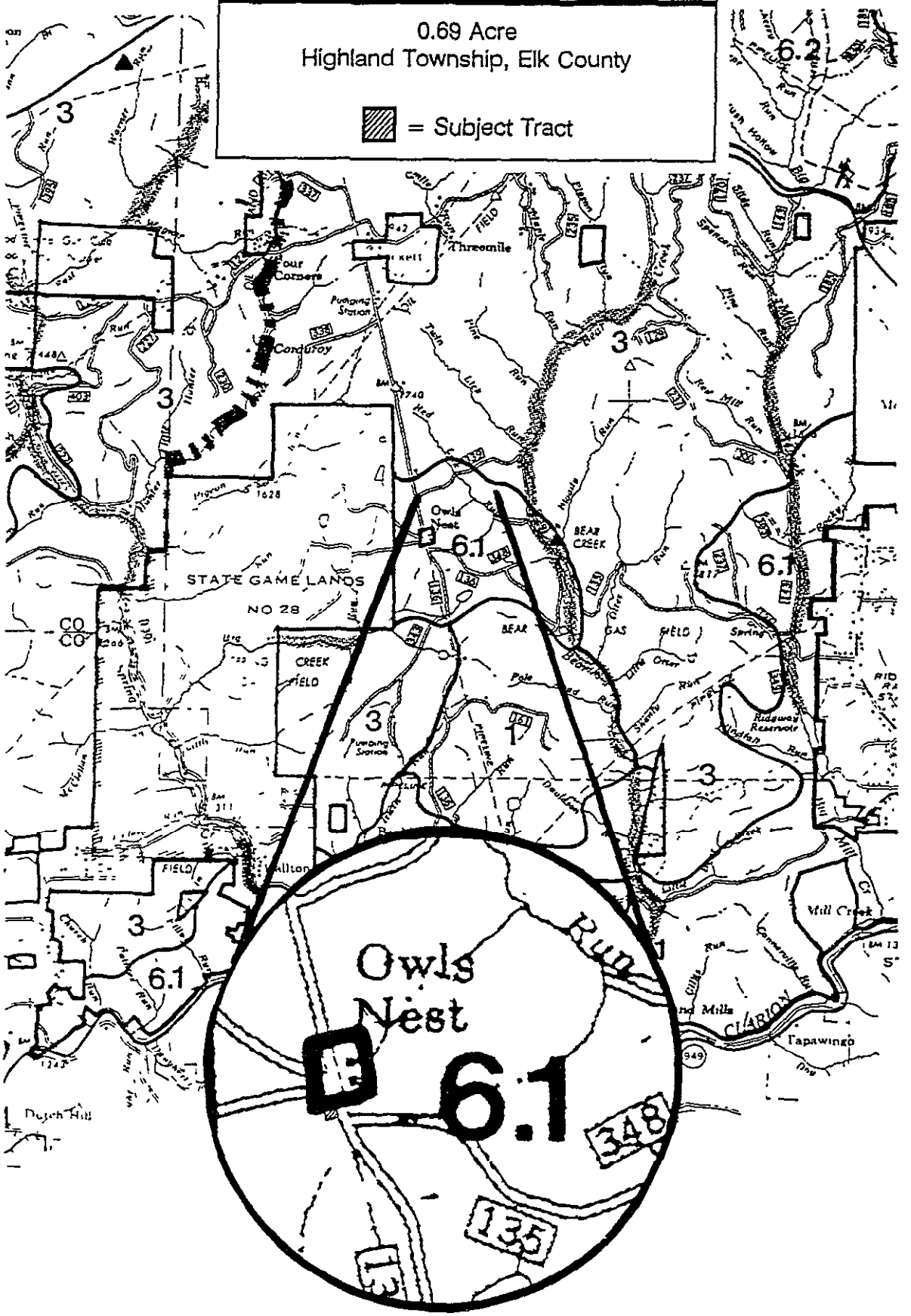
JOHN E PALMER
Forest Supervisor


LAKE ERIE
ERIE
WARREN
NEW YORK
PENNSYLVANIA
CLEVELAND
OHIO
PITTSBURGH
PENNSYLVANIA
MARYLAND
WEST VIRGINIA
10 miles
N
TIDIOUTE
WARREN
SHEFFIELD
BRADFORD
KANE
TIONESTA
Allegheny R.
MARIENVILLE
RIDGWAY
Clarion R.
Forest Boundary
Subject Area
River
Highway
District Boundary

PARCEL 1

0.69 Acre
Highland Township, Elk County

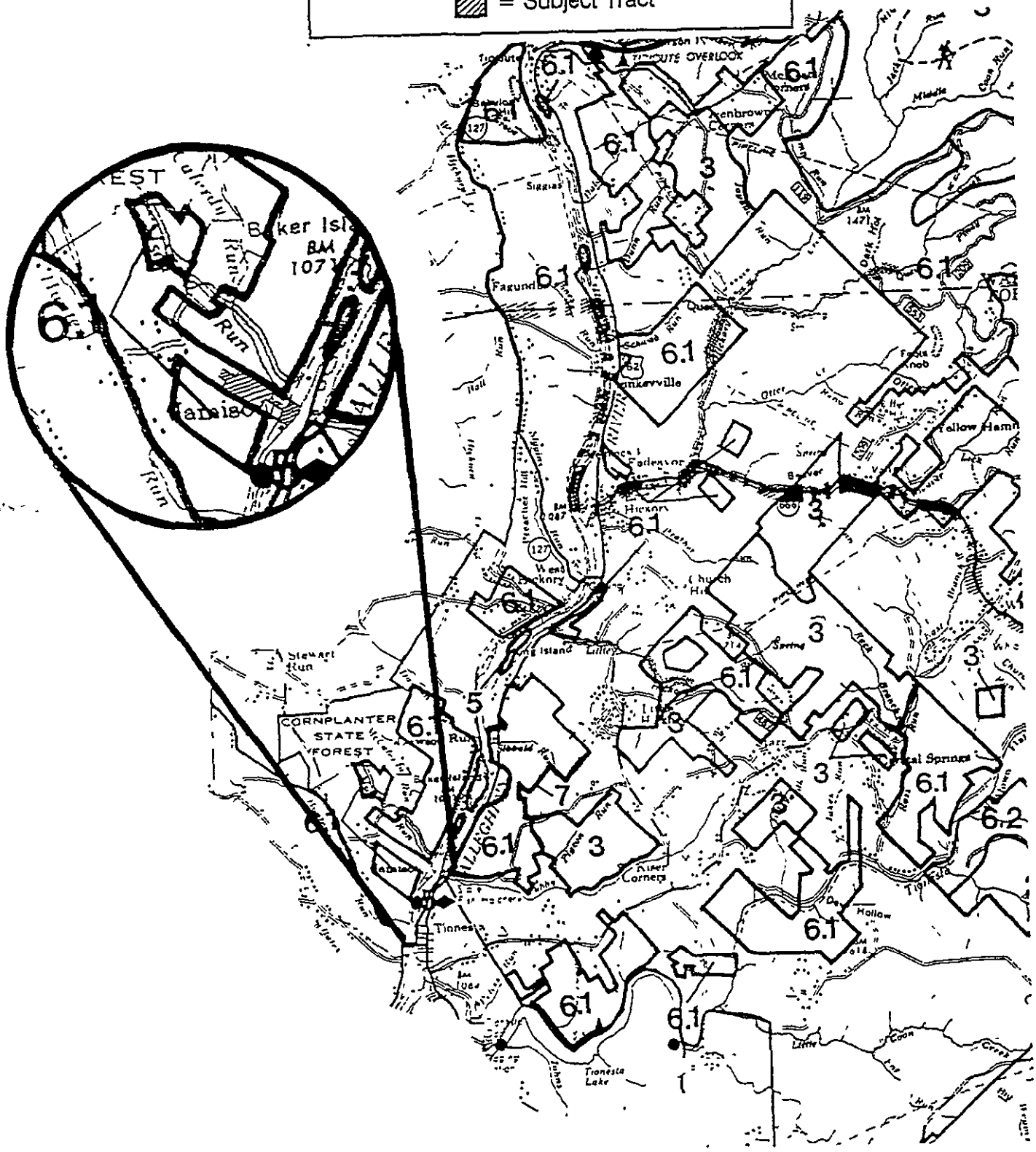
= Subject Tract



PARCEL 2

36.59 Acres
Tionesta Township, Forest County

= Subject Tract



LAND AND RESOURCE MANAGEMENT PLAN

ALLEGHENY NATIONAL FOREST

Amendment No. 6

February 21, 1997

Posting Notice: Amendments to this Forest Plan are numbered consecutively.

Page Code	Page Color	Superseded (Number of pages)	New
4-10	Ivory	1	1
4-19 & 19a	Ivory	1	2
4-24 - 28b	Ivory	5	7
4-34 - 35	Ivory	2	3
4-93	Tan	1	1
4-112	Tan	1	1
4-121 - 122	Tan	2	2
4-135	Tan	1	1
4-157	Tan	1	1
4-178	Tan	1	1
B-2	White	1	1
B-5	White	1	1
C-1	White	1	1

Digest

4-10 This page incoporates language excluding 6077 acres from development of ORV trails within the Westline Intensive Use Area in order to meet the intent of the State Wilderness Trout Stream program for South Branch Kinzua Creek from Hubert Run upstream to Forest Road 186.

4-19 & 19a These pages amend the 2500 section of the Forest Plan for management of riparian areas to meet fisheries habitat objectives.

4-24 - 28b	These pages amend the 2500 section of the Forest Plan for management of riparian areas, specifically the coordination of water resources with timber, recreation, transportation, and oil/gas management.
4-34 - 35	These pages amend the 2600 section of the Forest Plan related to Fish Habitat Management. Included are objectives and standards and guidelines related to streams, impoundments, Allegheny Reservoir, wilderness and remote trout streams, and liming.
4-93	This page includes references to the State Wilderness Trout Stream program and the Federal Remote Trout Stream program for Management Area 3.0.
4-112	This page updates the table to reflect that the number of fish habitat improvement structures for the second decade of the Forest Plan will be based on a habitat management plan for the Allegheny Reservoir (Management Area 6.1).
4-121 - 122	The standard for the Wilderness Trout Stream program is moved to the Fish section, and Remote Trout Stream language is added to this section as well for Management Area 6.1
4-135	Remote Trout Stream language is added to the Fish section for Management Area 6.2.
4-157	Remote Trout Stream language is added to the 2600 section for Management Area 6.4
4-178	Remote Trout Stream language is added to the 2600 section for Management Area 8.0.
B-2	Aquatic species indentified for monitoring are included in Appendix B of the Forest Plan.
B-5	Aquatic insect monitoring is added to the Wildlife Habitat Management Problem section in Appendix B of the Forest Plan
C-1	Fish Structures - Lake is edited to state projected number of structures for Decade 2 will be determined on a habitat management plan. This is located in Appendix C of the Forest Plan.

JOHN E. PALMER
Forest Supervisor

4. Motorized Winter:

Maximum grades will vary from 20 to 50 percent, clearing width 9-16 feet, clearing height 10 feet, tread width 5-12 feet.

5. Pedestrian Winter:

Maximum grades will vary from 10 to 25 percent, clearing width 5-8 feet, clearing height 10 feet, tread width 18-24 inches. Surface will vary from smooth to irregular with obstacles up to 6 inches high.

Off-Road Vehicles (ORV)

These standards apply only to National Forest lands, they do not provide policies to regulate motor vehicle use on the Forest road system. The concepts used to develop the Forest's ORV policy including identification of the five intensive ORV use areas mentioned below are discussed in the USDA-Forest Service Final EIS for Off-Road Vehicles, dated 1977.

Unlicensed ORVs are permitted only on designated ORV trails; all cross-country motorized vehicular use is prohibited

ORV trail systems will use a combination of constructed trails, roads closed to other highway vehicles, and roads jointly used by ORVs and other highway vehicles

ORV trails will be constructed and maintained in a permanent location to prevent erosion or impact to natural resources This does not preclude temporary rerouting to facilitate other resource activities

In all Management Areas except 5 (Wilderness), cross-country use is allowed for administrative vehicles, emergency vehicles, and use authorized by permit or contract (required by outstanding private OGM rights).

All off-road vehicle use which occurs on roads and ORV trails is subject to Forest Service off-road vehicle regulations and other applicable state and federal regulations.

Five intensive ORV use areas are located on the Forest. All new ORV trail construction is limited to these five areas. Connector trails located outside these areas will be limited

to redesignation of existing system roads. Whenever possible, ORV use within these areas is restricted to designated trails.

Marshburg-Stickney: Bounded on the west by Forest Road 137, on the north by State Route 346, on the south by State Route 321, eastward to National Forest Boundary or western boundary of the Bradford Municipal Watershed.

Westline: Bounded on the west by State Route 321, on the north by Forest Route 122, on the east U.S. Highway 219 to National Forest Boundary on the south. To meet the intent of the State Wilderness Trout Stream program, 6077 acres within this IUA is excluded from future ORV trail development surrounding South Branch Kinzua Creek from Hubert Run upstream to Forest Road 186.

Highland - Owls Nest - Twin Lakes: Bounded on the north by State Route 948, on the east by Bear Creek, on the south by north line of Warrants 1563-66, and on the west by Forest Roads 343, 344, and 136 along a line projected northward to Chaffee Corners. Twin Lakes is a small separate area around the impoundment and recreation area with National Forest Boundary on the north and Kane Experimental Forest on the south

Bluejay - Duhring. Bounded on the south by Forest Road 130, on the west by Forest Road 128, on the north by general line from Lynch to Watson Farm to Pig's Ear and south to state Game lands.

Grunderville - Chapman: Bounded on the south by Forest Road 437, on the west by State Route 337 and Lennart Run Road, southeasterly along a general line to the junction where Forest Road 155 joins the Chapman Dam Road.

Cultural Resources

*Conduct cultural resource surveys and needed evaluations in all areas to be affected by land transfer and earth-disturbing activities and design activities to avoid, minimize, or mitigate adverse effects.

*Forest will schedule the inventory of cultural resources on all National Forest System lands, giving priority to areas with high potential for disturbance

Interpretation may occur during the evaluation or the excavation of major sites, and the excavation may be featured as well as the findings of the evaluation or excavation.

Precommercial Thinning

Precommercial thinning may be appropriate in those timber stands that have a stocking level of 80% or more and contain a substantial share of their stocking (basal area) in saplings.

Goal should be to remove poorly formed trees and low-valued individuals that threaten the potential crop trees.

Silvicultural guidelines for precommercial thinning are provided in "Prescribing Silvicultural Treatments in Hardwood Stands of the Alleghenies" publication. (Appendix D contains additional information.)

Non-Commercial Thinning

Non-commercial thinning may be used to remove pulpwood in those instances where the option was not exercised by the timber purchaser.

2500 WATER AND SOIL MANAGEMENT

Best Management Practices

Best management practices for controlling nonpoint source pollution are contained in the Forest-wide and Management Area sets of standards and guidelines in the 2500 section. These practices are to be applied based on evaluation of site-specific conditions.

Riparian Area Management

Riparian areas will be managed under the principles of multiple use and sustained yield. Preferential consideration will be given to riparian dependent resources in riparian areas and in the area 100 feet from either edge of perennial streams and other water bodies. Riparian-dependent resources include, but are not limited to, wildlife habitat, fish habitat, recreation opportunities, and water quality. Riparian areas will be delineated and evaluated prior to implementing any project activity. Standards and guidelines addressing riparian resources other than soil and water are found under those resource headings.

Management objectives for perennial streams are to:

- have average daily maximum stream temperatures less than or equal to 63°F in streams supporting cold-water communities

- provide habitat complexity, channel stability, and pool formation in cold-water streams by managing for the recruitment and long-term maintenance of 75-380 pieces of instream large woody material per stream mile. For cool- and warm-water streams, manage for 75-200 pieces of instream large woody material per stream mile

- provide a sufficient number of biological mature trees growing along streams to provide for long-term input of large woody material

- maintain trees that providing streambank stability.

Management objectives for intermittent streams are to.

- maintain trees that are providing streambank stability

- maintain trees growing within a stream channel

- manage for leaf litter input

- manage for input of woody material.

Woody material naturally occuring in streams is removed only when fisheries habitat is being degraded or when unacceptable damage is occuring to facilities such as bridges and culverts. The need for removal is determined on a case-by-case basis.

Floodplains and Wetlands

Floodplains and wetlands will be managed in accord with Executive Orders 11988 and 11990, which are designed to protect the values of floodplains and wetlands. In general, management activities in these areas will be consistent with protecting the beneficial values of the areas and protecting public safety. Rehabilitation of existing facilities or construction of new facilities, such as roads and buildings, will only occur in floodplains and wetlands where no practical alternatives exist.

Soil and Water Resource Improvement

Disturbed areas that influence soil productivity or water quality will be evaluated and priority-ranked for restoration. Disturbed areas may include borrow pits, oil/gas developments, debris dams from storm flows, and areas damaged by illegal off-road vehicle use. The first priority for plugging abandoned oil and gas wells in federal mineral ownership will be those wells which pose an immediate safety hazard or are polluting surface or ground water. Watershed improvement projects will be designed so that restored areas meet the resource objectives of the management area.

Priority ranking of water resources improvement projects will consider the use of the water body and source of impact

Priority	Use of Water Body
Higher	Municipal watershed
	Exceptional Value/Wilderness Trout Streams**
	High Quality/Native Trout Streams**
	High Quality/Stocked Trout Streams**
Lower	Cold Water Fish/Native or Stocked Trout Streams**

**State Water Quality Standard/Type of Fishery Management

Priority	Source of Impact
Higher	Soils and water bodies affected by long-term adverse impacts caused by management practices or natural forces
Lower	Soils and water bodies affected by short-term adverse impacts caused by management practices or uses.

- Timber harvesting restrictions are necessary on these soils. Timber skidding equipment will be limited to low ground pressure type models or cable logging systems. Such low ground pressure models will express maximums of seven pounds per square inch (psi) with the machine alone, and 12 psi when the machine is skidding.
- Uneven-aged management should be used on these sites to prevent regeneration failure.
- Scattered residual trees should not be left on these sites due to the high hazard of windthrow.
- These sites are not suitable for recreational developments.
- ORV and hiking trails located on these soils should be built with special surfacing techniques.
- Subsurface water pressure on these sites may dislodge standard toilet vaults and thrust them to the surface. If they must be installed here, use special engineering design to prevent this from occuring.
- Where there is no alternative to constructing roads on these soils, geotextiles will be used
- Encourage oil/gas operators to use geotextiles in road and drilling pad construction.
- Containment pits for fluids produced from oil and gas operations should not be constructed on these soils due to the high water table.
- If containment pits are built, they must be lined with an impermeable material

Coordination of Water Resources with Timber Management

Logging systems should be laid out systematically to minimize the number and length of roads needed and to improve the efficiency of the system.

The grade of temporary roads and skid trails should not exceed 15 percent, except lengths up to 200 feet may pitch to 20 percent when sufficient cross-drainage is provided.

Timber harvesting restrictions for poorly and moderately drained soils are provided in the previous text on Soil Groups II and III.

Temporary roads and skid trails will be cross-drained to prevent erosion and sedimentation into streams. After use, all facilities including landings should be permanently closed and erosion-controlled

Landings located next to system roads may be used for hunter parking or other long-term uses if analysis indicates such a need.

Landings should be located and designed so that sediment will settle out before runoff reaches watercourses. Landings that must unavoidably be located on poorly drained soil types should be used only when the ground is dry or the landing is adequately surfaced.

Bridges, low-water crossings with pipes, or culverts will be provided to cross perennial and intermittent streams and will be designed so as not to impede upstream fish movement on fish-bearing streams.

All temporary fills in stream channels shall be removed in their entirety and the area restored to its original elevation

Sale layout will avoid, to the extent practical, the need for skidders to cross perennial and intermittent streams Crossing by skidders will occur only at designated sites. A temporary crossing will be constructed to prevent degradation of stream banks and bed.

No skidding or trucking is permitted down any portion of any stream or streambed.

Concerning perennial and intermittent streams:

- A filter strip should be maintained to minimize the movement of silt, humus, and other organic matter into the stream A suggested width is 50 feet plus 2 feet for every one percent of slope adjacent to each side of the stream or the actual size of the riparian area, whichever is larger.
- Streams will be kept free of logging debris, sawdust, equipment, oil, and other materials or obstructions that interfere with the orderly flow of water or adversely affect water quality.
- Logging operations should maintain the existing structure and shape of streambanks. This includes maintaining trees that are providing streambank stability, trees growing within the channel, and trees that have a high potential for providing instream woody material

- A canopy of high and/or low shade should be provided along perennial streams. This should protect the streams from excessive exposure to direct sunlight that would increase temperatures above that tolerable to the existing fish species. For cold-water streams, water temperatures should have an average daily maximum less than or equal to 68°F.

No herbicide will be sprayed on any stream or spring seep The following buffer strips will be established for all spray projects using ground application equipment.

- A 75-foot buffer will be maintained along perennial streams, intermittent streams that have flowing water on the day of spraying, and impoundments or lakes
- A 50-foot buffer will be maintained along intermittent streams not flowing water, and spring seeps that drain into a stream
- A 25-foot buffer will be maintained around small seep areas that do not have an outflow channel draining to a stream.

These widths may need to be expanded after evaluation of specific sites, i.e , for steep topography.

During aerial fertilization projects, a buffer strip equal to three-fourths of the swath width will be maintained along streams with flowing water This buffer strip will generally be in the range of 50 to 100 feet wide

Coordination of Water Resources with Recreation Management

New ORV trails should be constructed outside of the riparian area (save crossings) and where an effective filter strip is present to prevent sediment from entering a streamcourse The type of trail surfacing material to be used will depend on how effective the filtering capability of a filter strip is.

For existing off-road vehicle trails that have been identified as contributing sediment to a perennial or intermittent stream, a surfacing material that would reduce sediment to a streamcourse should be used.

Trails will be cross-drained to prevent erosion and sedimentation into streams Trail runoff should not directly enter a perennial or intermittent or spring, e g runoff should not be directed to a culvert that is being used to

cross a trail over a perennial or intermittent stream or spring.

In designing trails, segments with steep grades will be located so that eroded material will not enter perennial or intermittent streams.

ORV trails should cross perennial streams via bridges or culverts. Bridges, culverts, or rocked fords where suitable to stream type and topography may be used to cross intermittent streams. In the design of crossings, attention should be given to preventing vehicle use in streams and damage to stream banks.

ORV trail construction/reconstruction at perennial and intermittent stream crossings, and areas that could affect water quality, should use appropriate interim erosion control and final stabilization measures. This could include hydroseeding or conventional seeding and mulching, placing biodegradable erosion control matting on exposed soil, or other appropriate methods. The interim control measures should be done concurrently with the activity. The erosion control measures would be designed to reduce the impact of raindrops on exposed soil and surface runoff.

Stream crossings will be designed so as not to impede upstream fish movement.

Locate stream crossings for hiking trails at sites with stable streambanks and streambeds

Erosion and sediment control practices will be used during construction of recreation sites.

Coordination of Water Resources with Transportation

An engineering guide titled "Guidelines for Road Design in Proximity to Streams" will be used to address the "how-to" for several of the standards in this section.

The suggested distance between new roads and perennial and intermittent streams would be beyond the riparian area and where an effective filter strip is present to prevent sediment from entering a streamcourse The type of road surfacing material to be used will depend on how effective the filtering capabilities of the filter strip are.

During planning of the reconstruction of existing roads, avoid poorly drained soils (Soil Group III) For existing roads that are within a riparian area or do not have an effective filter strip between the road and a perennial or intermittent stream, an evaluation will be made to determine if a road should be rerouted, closed, or if a road should be left in place and improved to reduce sediment runoff

Although some new roads will require stream crossings, road systems will be planned to avoid or eliminate the crossing of perennial streams whenever reasonably possible.

For most road crossings, dredge and fill permits issued by the Corp of Engineers under Section 404 of the federal Clean Water Act are not required. Roads not requiring specific 404 permits include local and temporary roads built exclusively for timber management, which are covered by the exemption for normal silvicultural activities, all roads crossing headwater sections of streams (flow less than five cfs), which are covered by a nationwide permit; and minor crossings with less than 200 cubic yards of fill below ordinary high water, also covered by a nationwide permit. Road crossings of streams that do not fit any of the above three categories require a specific permit from the Corps of Engineers.

All road construction/reconstruction at perennial and intermittent stream crossings, and areas that could affect water quality, should use appropriate interim erosion control and final stabilization measures. This could include hydroseeding or conventional seeding and mulching, placing biodegradable erosion control matting on exposed soil, or other appropriate methods The interim control measures should be done concurrently with the activity The erosion control measures would be designed to reduce the impact of raindrops on exposed soil and surface runoff

At perennial and intermittent stream crossings, a high quality surfacing material, binding material, or other suitable material should be used that will reduce sediment to streamcourses.

Discharges of fill material into stream channels to construct a road crossing shall be made in a manner that minimizes encroachment of trucks, tractors, bulldozers, or other heavy equipment into waters of the United States that lie outside the lateral boundaries of the fill itself.

Stream crossings will be designed and constructed to maintain the stream's original gradient.

Stream crossings of fish-bearing streams will be designed so as not to impede upstream fish movement. During project planning where existing crossings on perennial fish-bearing streams are impeding fish movement upstream and the crossings are planned to be replaced, evaluate their replacement with non-impeding crossing methods.

Ditch erosion and transport of sediment will be minimized by placing sufficient culverts to handle small volumes of water frequently. Cross-drainage will be provided before perennial and intermittent stream crossings to discharge road sediment onto the forest floor rather than into a streamcourse. Alternatively, sediment traps can be used.

Drainage of culverts onto fill slopes will be avoided where practical. If unavoidable, energy dissipators or water spreaders should be provided to prevent erosion of the fill slope.

Where culverts must drain onto steep slopes and the potential for gully formation exists, energy dissipators will be used.

Woody debris naturally occuring in streams is removed only when degrading fisheries habitat or when unacceptable damage to facilities such as bridges and culverts is occuring. The need for removal is determined on a case-by-case basis.

Coordination of Water Resources with Oil/Gas Management

Developers will provide an erosion and sediment control plan to the Forest Service prior to construction.

Surface disturbance will be limited to the minimum necessary for extraction of minerals, as stipulated by the Secretary's Rules and Regulations governing reserved minerals or by case law concerning outstanding mineral rights.

Although some new roads will require stream crossings, road and pipeline systems will be planned to avoid or eliminate the crossing of perennial streams whenever reasonably possible. Operators will design and construct stream crossings such that detrimental impacts to the stream are reduced or minimized.

Considerations for road location and design.

- The suggested distance between new roads and perennial and intermittent streams would be beyond the riparian area and where an effective filter strip is present to prevent sediment from entering a streamcourse. The type of road surfacing material to be used will depend on how effective the filtering capabilities of the filter strip are
- Provide adequate cross-drainage to handle small volumes of water frequently Cross-drainage will be provided before perennial and intermittent stream crossings to discharge road sediment onto the forest floor rather than into the stream Energy dissipators will be used where needed to prevent gully formation on discharge slopes Alternatively, sediment traps that are regularly maintained may be used.
- Road grades preferably should be kept to two to eight percent, with grades up to 15 percent acceptable on short pitches of 200 feet or less
- All road construction/reconstruction at perennial and intermittent stream crossings, and areas that could affect water quality, should use appropriate interim erosion control and final stabilization measures. This could include hydroseeding or convertional seeding and mulching, placing biodegradable erosion control matting on exposed soil, or other appropriate methods. The interim control measures should be done concurrently with the activity. The erosion control measures would be designed to reduce the impact of raindrops on exposed soil and surface runoff
- Permanent roads should be surfaced with sufficient stone to carry anticipated traffic
- At perennial and intermittent stream crossings, a high quality surfacing material, binding material, or other suitable material should be used that will reduce sediment to streamcourses
- Stream crossings on fish-bearing streams will be designed so as not to impede upstream fish movement.
- During project planning where existing crossings on perennial fish-bearing streams are impeding fish movement upstream and the crossings are planned to be replaced, evaluate their replacement with non-impeding crossing methods
- Roads to access test wells should be constructed to minimum standards in order to facilitate site restoration in the event of a dry hole or a decision not to produce In the event of a decision to produce, the road should be upgraded as necessary for its use.

- Woody debris naturally occuring in streams is removed only when degrading fisheries habitat or when unacceptable damage to facilities such as bridges and culverts is occuring. The need for removal is determined on a case-by-case basis.

Within the constraints imposed by the well spacing pattern, locate wells to minimize environmental damage. An adequate filter strip should be provided to minimize entry of sediment into streams.

Use of Forest Roads will require a Road-Use Permit. Road construction necessary to handle the OGM traffic is the developer's responsibility.

In oil/gas developments, pipelines should be buried a minimum of three feet to protect them from damage and freezing Exceptions may be made if site conditions warrant, such as bedrock requiring blasting. Where Forest Service has approval or permitting authority pipelines will be buried, except where site conditions make it infeasible.

In oil/gas developments under 1911 Secretary's Rules and Regulations or in outstanding ownership, the developer will be encouraged to bury pipelines as described above.

It is the operator's responsibility to comply with all state and federal water pollution abatement laws and regulations.

Each operator must prepare and implement a site-specific Preparedness, Prevention, and Contingency Plan (PPC Plan), which includes a spill prevention, containment, and counter-measure plan, as required by state and federal regulations. This plan details practices for handling, usage, and storage of materials which can cause environmental degradation if spillage, leakage, or discharge occurs.

Wastewaters will be disposed of by methods approved by state and federal regulatory agencies. Disposal of polluting materials must also be in accordance with stipulations of the deed reserving the mineral rights.

Propagation Areas may be provided on selected impoundments in cooperation with the Pennsylvania Game Commission.

Seeding of annual grains adjacent to selected shorelines will be permitted.

Potholes should be constructed only where they complement existing developments, such as small impoundments.

New shallow impoundments and potholes shoudl be developed only in areas where poorly or very poorly drained soils occur.

Consider utilization of road construction projects to develop shallow water areas.

Islands and peninsulas may be provided for nesting and loafing areas.

Cover should be provided within and adjacent to impoundments for escape and nesting purposes respectively.

Nesting Structures

Nesting boxes may be installed in wetland habitats.

Canada goose nesting structures may be provided in impoundments.

Beaver

Beaver will be encouraged on selected streams (non-trout) where stream gradient and food availability are suitable.

Specialized Habitat

Areas with rock ledges suitable for raven nesting sites should be identified and managed in a manner that will protect these areas.

Road and Trail Development

Road and trail development will be located to protect key wildlife habitat values (turkey brood habitat, deer and turkey wintering areas, wetlands, etc)

Fish Habitat Management - Streams

The Forest will maintain and restore fish population balance to the extent practical through habitat and access manipulation. Population manipulation as coordinated with the Pennsylvania Fish and Boat Commission will be used when necessary.

Where habitat is lacking in streams, and water quality (i.e. pH) is not considered limiting, habitat restoration/improvement projects could be considered for the creation of habitat diversity, such as pools and cover for fish growth and survival. Streams would be managed to provide for approximately 35-65% pool and glide habitat.

Where habitat restoration/improvement projects are planned, materials should be used that are naturally appearing as possible and blend in with the immediate surroundings.

Four streams identified for long-term monitoring will not be artificially improved. These streams have been identified to monitor long-term trends of the variation in habitat, water quality, and fish and aquatic insect communities without direct stream alteration (i.e fish habitat improvement structures) The streams include

Stream	Ranger District	Tributary to:
Blood Run	Marienville	Tionesta Creek
Buck Lick Run	Bradford	Chappel Fork
Head Run	Bradford	Tionesta Creek
Slide Run	Marienville	Big Will Creek

Fine sediment should be at a level that does not cause detrimental effects to aquatic communities, individual species, or their habitats

Permit and maintain protected stocking areas on all stocked trout streams within the Forest which comply with Pennsylvania Fish and Boat Commission's policy and directives.

Stream flows should not be impeded or accelerated nor fish passage restricted unless prescribed under a fish management plan

Wilderness Trout Streams (State classification)

The following streams will be managed to conform to Wilderness Trout Streams according to Pennsylvania Fish and Boat Commission Policy No. 400-17-69. All management areas are considered compatible with the policy

- Arnot Run, Warren County
- Crane Run, McKean and Elk Counties
- East Hickory Creek above its confluence with Middle Hickory Creek, Warren County
- Four Mile Run, Forest County
- Wildcat Run, Warren County
- South Branch Kinzua Creek from its confluence with Hubert Run upstream to Forest Road 186, McKean County.

Remote Trout Streams (federal classification)

The following streams would be included in this designation:
- East Fork Run, Forest, Warren, and McKean Counties
- Morrison Run, McKean County
- Pell Run, Warren County
- Tracy Run, Warren and McKean Counties

Stream crossings on these four streams would normally not be acceptable for federally owned OGM or Forest activities, and roads or off-road vehicle trails would not parallel the streams within 1/4 mile

Fish Habitat Management - Impoundments

Improvements to fish habitat and water quality could occur in existing warm-water impoundments where data indicate that these factors are limiting fishery production

If warm-water impoundments are constructed:

- They will be 25-100 surface acres in size.
- They will be located where at least 65 percent of the impoundment will be at least five feet in depth.
- They will not be located in drainages whose pH is less than 6.0 unless the liming and fertilization of that lake is accepted as part of the project costs.
- Drainages with a total hardness of at least 25 p.p.m. as Calcium Carbonate will be selected first.
- The impoundment design will include a reasonably rapid drawdown capability.

- An environmental assessment will be made for each site proposed for a warm water impoundment to insure that the project will be cost-effective and comply with all the Forest standards and guidelines.
- Downstream temperatures will not be affected adversely.

Fish Habitat Management in the Allegheny Reservoir

The placement of fish habitat improvement structures could occur at any depth in the reservoir. The number and type of structures to be placed at any one location will be determined by site-specific analysis. The site-specific analysis will also address visual quality during winter drawdown periods, and also for safety concerns associated with recreational water activities

Fish habitat improvement structures should be monitored for their effectiveness at a minimum once every two years using accepted monitoring methods Not all structures would be monitored, but rather a representative sample of the different structure types

Subimpoundments could be created within the Allegheny Reservoir.

Stream/Impoundment Liming

Streams and impoundments that are acidic or vulnerable to acidification could be considered for some type of improvement to water quality, such as liming to increase buffering capacity.

The main objective would be to maintain/restore native or wild fish populations in streams Streams scheduled for stocking of hatchery fish could benefit from this as well.

The application of a buffering agent could occur in impoundments that have either self-sustaining fish populations, or are stocked for a put-and-take fishery

Four streams identified for long-term monitoring will not be artificially improved. These streams have been identified to monitor long-term trends of the variation in habitat, water quality, and fish and aquatic insect communities without direct stream alterations (e.g. fish habitat improvement structures). The streams include:

Stream	Tributary to:
Blood Run	Tionesta Creek
Buck Lick Run	Chappel Fork
Head Run	Tionesta Creek
Slide Run	Big Mill Creek

Refer to 2500 Water and Soil Management and 2600 Wildlife and Fish Habitat Management for each Management Area for additional standards and guidelines to protect water quality, stream temperature, and fish habitat.

Endangered, Threatened, and Forest Species of Concern

The habitat requirements of all animal and plant species that are listed or proposed for listing as endangered, threatened, or of special concern in Pennsylvania were considered in developing the Forest-wide standards and guidelines, as well as those for specific management areas. Most of the species of concern can be protected and their habitat requirements provided by these standards and guidelines. Some species, however, need additional considerations for various reasons to insure that viable populations will be provided on the Forest. The following species were selected in cooperation with the Pennsylvania Game Commission; Pennsylvania Fish and Boat Commission, Pennsylvania Department of Environmental Resources, Bureau of Forestry; and Western Pennsylvania Conservancy, to receive special emphasis in the management program. A complete listing of animals and plants and their classifications by the responsible state agency is on file in the Forest Supervisor's office.

Endangered

Bald Eagle (Haliaetus leucocephalus)
Indiana Bat (Myotis sodalis)*

Forest Species of Concern

Osprey (Pandion haliaetus)**
Henslow's Sparrow (Ammodramus henslowii)***
Cooper's Hawk (Accipiter cooperii)
Red-shouldered Hawk (Buteo lineatus)
Northern Goshawk (Accipiter gentilis)
Sharp-shinned Hawk (Accipiter striatus)
Grasshopper Sparrow (Ammodramus savannarum)
Marsh Wren (Telmatodytes palustris)
Eastern Bluebird (Sialia sialis)
Great Blue Heron (Ardea herodias)
Raven (Corvus corax)
Bobolink (Dolichonyx oryzivorus)
Bobcat (Lynx rufus)
Keen's Little Brown Bat (Myotis keenii)
Silver-haired Bat (Lasionycteris noctivagans)
Timber Rattlesnake (Crotalus horridus)
Small-headed Rush (Juncus brachycephalus)
Broad-leaved Water Plantain (Alisma plantago-aquatica)
Puttyroot (Aplectrum hyemale)

*Though this species has not been recorded as occurring within the Allegheny National Forest, its historic and suspected range includes this area. Old growth habitat in riparian areas preferred by this species for nursery colonies will be provided through implementation of the standards and guidelines as well as the management area assignments.

**This species is classified as Endangered by the state and is a migrant. It has attempted to nest here recently. A hacking project is underway on the Allegheny Reservoir in New York.

***This species is classified as Threatened by the state and occurs on private land within the proclamation boundary.

The small-whorled pogonia (Isotria medeoloides), that is classified as Endangered on the federal list, was not included on the Forest list because it has not been known to occur on this unit historically. Since a population of this species has been located recently in Venango County near Oil City, Pennsylvania, within the general region of the Forest, the guidelines for locating this species will be utilized to protect it.

Provide wetland habitats to meet the needs of selected species.

Provide four to six live den trees per acre with a minimum DBH of 14 inches in the oak type.

Roads and trails should be located to avoid turkey brood habitat and wintering areas for both turkey and deer.

Road construction should be scheduled to avoid a conflict during the turkey nesting season, April 15 to June 15, to the extent practicable.

Local roads will be closed for the following reasons:

- Those impacting turkey brood habitat areas will be closed during the period of May 1 to September 1, except for two years following sales they may be left open for firewood collection.
- During the fall turkey and bear hunting seasons if necessary to meet the management objectives for these species.
- During the deer season to direct hunting pressure into other areas where overbrowsing by deer is occurring.

Resource management activities that would disturb turkeys during the nesting season (April 15 - June 15) should be scheduled to avoid a conflict to the extent practicable.

Fish

Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

To meet the Pennsylvania Fish and Boat Commission guideline for Wilderness Trout Streams management, local roads will be closed; i.e., stream must not be accessible to motorized vehicles at more than one point every two miles. Refer to the 2600 section of the Forest-wide Standards and Guidelines for a listing of these streams.

To meet the guidelines for the Remote Trout Stream program, refer to the 2600 section of the Forest-wide Standards and Guidelines for a listing of these streams and the guidelines.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Provide for utility transmission corridors. Emphasize use of corridors when granting appropriate rights-of-way.

	*Utility Distribution Systems *Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.
4000 RESEARCH	The Muzette Tract is a candidate Research Natural Area (RNA) located in Management Area 3. This area is only under study and must receive a thorough evaluation before being officially designated "RNA" by the Chief of the Forest Service. No actions will be taken that may effect its suitability or capability to be so designated. For additional information, consult the Final EIS, Chapter 3, Section B - "Special Areas". The primary purpose of an RNA is to preserve unique ecosystems for scientific purposes. The Northeast Forest Experiment Station will be responsible for the management of all designated RNA's.
5100 FIRE MANAGEMENT	*Prescribed fire may be used to establish or maintain vegetation under established resource management prescriptions. *Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with uses that compromise exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource management objectives.

Recreational opportunities will include dispersed activities such as cross-country skiing, backpacking, hiking, fishing, hunting, and ORV trail riding.

A variety of game and non-game wildlife species may be seen that are characteristic of mature forested habitat including squirrel in the oak type and non-game birds in all types.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small game, non-game, indicator species, or species of special concern.

Activities, such as right-of-way maintenance, oil/gas well hydrofracturing, drilling and maintenance, will occur but will be a minor part of the total activity in the area.

TABLE 4-17 Output Objectives for Management Area 6.1

Output by Management Problem		Unit of Measure	Average Annual Amount Planned Decade 1 D (D2)	Projected Decade 2 D (D2)
Developed Recreation Opportunities				
Semi-Primitive Motorized	SPM	M RVD	4 (4)	5 (5)
Roaded Natural	RN	M RVD	402 (402)	432 (432)
Dispersed Recreation Opportunities				
Semi-Primitive Motorized	SPM	M RVD	292 (282)	292 (282)
Timber				
Hardwood Sawtimber		MMBF	3.6 (3.6)	3.6 (3.6)
Hardwood Pulpwood		MMBF	2.3 (2.3)	2.3 (2.3)
Wildlife				
Big-Game Hunting		M WFUD	19 (17)	23 (22)
Small-Game Hunting		M WFUD	15 (15)	17 (17)
Non-Game		M WFUD	14 (13)	14 (13)
Fishing		M WFUD	66 (66)	75 (73)

TABLE 4-18 Practices for Management Area 6.1

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)	Projected Decade 2 D	(D2)
Developed Recreation Area Construction					
Other Forest Areas					
Campground	# of areas[1]	0	(0)	1	(1)
Boat Launch	# of areas	2	(2)	0	(0)
Dispersed Recreation Trail Construction					
Pedestrian	miles	1.8	(1.7)	2	(2)
Motorized-Summer	miles	2.2	(2.2)	2.2	(2.2)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Improvement	acres	589	(581)	772	(755)
Wildlife Structures	# of struct.	3	(3)	3	(3)
Fish Structures in Lakes	# of struct.	80	(80)	TBD[2]	
Timber Practices for Wildlife					
Final Harvest	acres	300	(300)	300	(300)
Thinning or Selection Cut	acres	700	(700)	700	(700)
Herbicide	acres	170	(170)	170	(170)
Fertilization	acres	180	(180)	180	(180)
Fencing	acres	36	(36)	36	(36)
Planting	acres	15	(15)	15	(15)
Site Prep for Natural Regeneration	acres	300	(300)	300	(300)
Road Construction	miles	1.5	(1.5)	1.5	(1.5)
Road Reconstruction	miles	.6	(.6)	.6	(.6)

1 Unit of measure for developed recreation area construction is not the annual average but the number of areas to be completed within the decade.

2 TBD- To be determined based on an Allegheny Reservoir Fish Habitat Management Plan.

Manage habitat adjacent to selected warm-water (nontrout) streams and lakes to maintain viable populations of beaver, other furbearers, and associated aquatic species.

Provide cover/forage edge adjacent to rights-of-way.

Provide for the retention of dead and down logs and other ground material necessary to maintain viable populations of indigenous species, such as reptiles and amphibians.

Regeneration cuttings will be small and well distributed. Poletimber and sawtimber will comprise a minimum of 70 percent of the forested acreage per 5,000 acres of habitat.

Provide special habitat requirements necessary to maintain viable populations of those species requiring isolation.

Provide wetland habitat to meet the needs of selected species.

Provide three to five live trees per acre containing nesting cavities and having a minimum DBH of 14 inches for cavity-nesting birds and mammals.

Within regeneration units, mark for retention the snags and cavity nesting trees (leave or reserve trees) which would meet utilization standards under the timber sale contract.

Road construction, reconstruction, and other resource management activities that would disturb turkeys during the nesting season, April 15 to June 15, should be scheduled to avoid a conflict to the extent practicable.

Roads should be located to avoid turkey brood habitat, as well as turkey and deer wintering areas.

Local roads may be open to hunters during the antlerless deer season, flintlock muzzleloader, and late archery seasons if overbrowsing is occurring and the road conditions are suitable.

Roads and trails should be located in a manner to avoid turkey brood habitat and both turkey and deer wintering areas.

Fish

*Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

To meet the Pennsylvania Fish and Boat Commission guideline for Wilderness Trout Streams management, local roads will be closed (i.e., stream must not be accessible to motorized vehicles at more than one point every two miles), refer to the 2600 section of the Forest-wide Standards and Guidelines for a listing of these streams.

To meet the guidelines for the Remote Trout Stream program, refer to the 2600 section of the Forest-wide Standards and Guidelines for a listing of these streams and the guidelines.

2700 SPECIAL USES

*Utility Transmission Corridors

*NOTE: See also 7700 Transportation System, Corridors.

*Permit those facilities that are required to serve recreational or administrative facilities. Exceptions will be considered on an individual basis.

*Utility Distribution System

*Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOGY

Private Minerals

Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Mitigation measures may include gating roads, vegetative screening of facilities, and wildlife habitat improvement projects. Implementation of these measures will be negotiated with the oil/gas developers.

5100 FIRE MANAGEMENT

*Prescribed fire may be used to establish or maintain vegetation for wildlife.

*Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.

Roads and trails should be located to avoid turkey brood habitat areas, as well as turkey and deer wintering areas.

Local roads will be closed for the bear and fall turkey hunting seasons when necessary to meet the management objectives for these species.

Retain fruit and mast-producing tree and shrub species and improve their productivity by utilizing management techniques such as release, pruning, and fertilizing. In selected areas, perform replacement planting of such species to restore productivity of the site. Protective fencing may be required to protect seedlings from deer.

Provide three to five live trees per acre having a minimum DBH of 14 inches and containing nesting cavities for cavity-nesting birds and mammals.

Within regeneration units, mark for retention the snags and cavity-nesting trees (leave or reserve) which would meet utilization standards under the timber sale contract.

Road construction and resource management activites that would disturb turkeys during the nesting season (April 15 to June 15) should be scheduled to avoid conflicts to the extent possible.

Fish

*Fish passage in streams should not be blocked or prevented, unless done in conjunction with prescribed fish management.

To meet the guidelines for the Remote Trout Stream program, refer to the 2600 section of Forest-wide Standards and Guidelines for a listing of these streams and the guidelines.

2700 SPECIAL USES MANAGEMENT

Utility Transmission Corridors

*Permit those facilities that are required to serve recreational or administrative facilities. Exceptions will be considered on an individual basis.

*Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands, such as utility rights-of-way serving individual residences, will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOGY	Private Minerals Special empnasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this management area. Mitigation measures may including vegetative screening of facilities, gating and closing of roads during the non-motorized period, and removal of unused equipment. Implementation of these measures will be negotiated with the oil/gas developers.
5100 FIRE MANAGEMENT	*Prescribed fire may be used to establish or maintain vegetation for wildlife. *Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable state laws.
5400 LAND OWNERSHIP	*Surface Ownership *Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.
7300 BUILDINGS AND STRUCTURES	*Buildings and structures may be provided to support resource managment objectives.
7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES	Water Supply *Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality. Water systems may include springs and hand pumps. *Solid Waste *Emphasize and promote use of the carry-in/carry-out method of disposal. Landfill disposal sites will not be provided unless other more compatible alternatives are exhausted including private land. Effluents Sewage systems may include vault toilets.

Specialized habitats and inclusions within the management area will receive treatments to specifically benefit small-game, non-game, indicator species, or species of special concern.

Maintain or enhance existing permanent openings and grasslands in upland forest areas to meet wildlife needs.

Openings may be planted with fruit producing trees and shrubs, although most will be managed in native grasses, forbs, and shrubs.

Protect and enhance spring seeps and other water areas including the adjacent vegetation that are critical to wildlife.

To meet the guidelines of the Remote Trout Stream program, refer to the 2600 section of Forest-wide Standards and Guidelines for a listing of these streams and the guidelines.

2700 SPECIAL USES MANAGEMENT

*Utility Transmission Corridors

*Permit only those facilities that are required to serve recreational or administrative needs. Exceptions will be considered on an individual basis.

*Utility Distribution Systems

*Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines.

2800 MINERALS AND GEOLOGY

Federal Minerals

Federally owned oil, gas, and other minerals within the NRA have been congressionally withdrawn from leasing consideration. Rock sources within the NRA will not be used or developed.

Private Minerals

The goal of Forest Service administration of private mineral development is to reduce the impacts of development on visual quality, recreation opportunities, watershed values, and wildlife habitat, while honoring private rights.

At least 60 days in advance of proposed development, the developer will provide the Forest Service with a Plan of Operations. The Plan of Operations must be approved by the Forest Service before any surface disturbing activities begin. In addition to those items specified in the forest-wide standards and guidelines, the Plan will address the following:

Schedule of Activities and Staging of Operations

The staging of well construction will be provided in the Plan of Operations. At any one time, no more than five well sites and accompanying access roads will be cleared in advance of actual drilling operations. Each five-well package will be handled as a single timber sale payment unit.

In the vicinity of developed recreation sites or areas receiving heavy recreation use, the Forest Service may impose restriction on the hours, days, or season of operation in order to reduce impacts on recreationists.

Water for hydrofracturing will be stored in tanks.

Production and Collection Facilities

Visual impacts of facilities will be reduced to the extent possible by siting, vegetative screening, or other methods. All above-ground facilities will be painted with earth-tone colors. Construction materials will meet visual quality requirements.

Tank batteries will be located outside the NRA where possible. Tanks and separators will be located on one site in the development. Tank hatches will be locked.

Where possible, all utility and collection lines will be buried at a minimum depth of three feet and marked with Terra tape or its equivalent. Surface lines may be permitted if boulders, topography, or other conditions make burial impractical or infeasible. Lines will be located in road rights-of-way. Lines may be located outside of rights-of-way if now new corridor clearing is required for their installation.

TIONESTA RESEARCH NATURAL AREA (TRNA) AND KANE EXPERIMENTAL FOREST (KEF)

1600 INFORMATION SERVICES	No effort to disseminate information. Specific inquiries will be responded to.
1900 LAND AND RESOURCE MANAGEMENT PLANNING	Vegetative Management Preserve the natural condition present in the Tionesta Research Natural Area. Within the KEF, vegetative management standards will be specified within each approved research project. Research projects will generally relate to forest management problems and opportunities in the northeast.
2300 RECREATION MANAGEMENT	In both the Tionesta Research Natural Area and KEF, no new recreation investments will be made. In the KEF, the existing hiking trail will be maintained. The ROS class provided will be semi-primitive motorized. Dispersed use will be allowed in the Tionesta Research Natural Area but to protect the natural conditions, no camping or fires will be permitted.
2400 TIMBER MANAGEMENT	In KEF, silvicultural systems and associated activities will be specified in each research project. In TRNA, timber harvesting will not occur unless associated with development of private mineral ownership.
2500 WATER AND SOIL RESOURCE MANAGEMENT	Riparian Area Management Riparian areas will be managed to protect the natural condition of riparian ecosystems. Creation or enhancement of riparian-dependent resources, such as wildlife and fish habitat or recreation opportunities, is generally not appropriate.

2600 WILDLIFE MANAGEMENT	In the KEF, no wildlife habitat improvements will be provided except to protect or enhance threatened and endangered species habitat. In the TRNA, there will be no wildlife habitat improvements. To meet the guidelines for the Remote Trout Stream program, refer to the 2600 section of Forest-wide Standards and Guidelines for a listing of these streams and the guidelines.
2800 MINERALS AND GEOLOGY	<u>Federal Minerals</u> Surface disturbing mineral development is generally not compatible with the resource objectives of this management area. This compatibility determination, however, will be based on a site specific analysis of each tract. <u>Private Minerals</u> Special emphasis will be given to identifying and implementing measures to reduce adverse impacts on the resource objectives of this Management Area. Implementa- tion of these measures will be negotiated with the oil/gas developers. Mitigation measures may include: - Location of support facilities, such as tank batteries, separators, pipeyards, etc., outside the management area - Use of techniques and equipment that can be put underground, such as downhole pumps, buried utility lines, and pipelines - Vegetative screening of well locations and roads and noise control measures. - Removal of brine water from the management area.
4000 RESEARCH	The Northeastern Forest Experiment Station will be responsible for scientific use of the Tionesta Research Natural Area and Kane Experimental Forest.
5100 FIRE MANAGEMENT	Fire suppression will recognize the natural conditions and active research projects in the area and avoid use of heavy mechanical equipment unless the size, intensity, and/or escape of fire is critical to values of MA 8 or adjacent management areas.

APPENDIX B

MONITORING PLAN

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability
36 CFR 219.12(k)(1) A quantitative estimate of performance Compare accomplishments with forest Plan Objectives	Outputs by Management Area and forest Totals	RVD , MBUD, MBF	Annual	MAR	High	High
36 CFR 219.12(k)(3) Verify unit costs used in Plan Build data for Plan revision	Management Practices	$/Unit	Annual	PAMAR & special cost studies as needed	High	High
	Management Practices in relation to significant factors that affect cost	i e $/Mile of road construction by land type association	Annual	PAMAR and/or special cost studies as needed	High	High
36 CFR 219.12(k)(2) Determine if the prescriptions are being implemented within the management areas assigned and as specified in the forest Plan management direction	Management Practices and Standards and Guidelines	Compliance check by prescription, by management area and by project-Narrative Report Summary	Annual on a sample basis	Management reviews, Project EA reviews, Sample field surveys RIM, TMIS, MAR, WMIS	Moderate	Moderate
Verify predicted effects of management practices on environmental elements	Implementation and effectiveness of BMP's in controlling NPS pollution	Varies Narrative on Effectiveness	Annually or as necessary on selected OGM, Rec , and Timber projects in decade one.	Impact Monitoring, Field surveys, Sequential Photo Points, Spray cards in buffer strips	Moderate	Moderate

MONITORING PLAN (Con t)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability
	Recreation Opportunities and Visual Quality	Acres by ROS class and VQO	5 Years	Revise Recreation Opportunity Spectrum Map and Visual Quality Objective map	Moderate	Moderate
36 CFR 219.7(f) To identify emerging issues issues, concerns, and opportunity from adjacent land owners or other public agencies	Land owner reaction; Other agency	Number of comments; Narrative	Annual	Letters, meeting, personal contacts, public involvement responses	Moderate	Moderate
36 CFR 219.19 Monitor population trends of indicator species to maintain viable populations of all wildlife species.	White-tailed Deer American Woodcock Ruffed Grouse Beaver	Population Trend	Annual	Field surveys, PGC, Harvest Data	Moderate	Moderate
	Red-shouldered Hawk, Great Blue Heron	Population	Annual	Field surveys	High	Moderate
	Rattlesnake Yellow-bellied Sapsucker* Pileated Woodpecker* Magnolia Warbler* Black-Throated Green Warbler*, Barred Owl Hermit Thrush	Population Trend	Annual for three years andy every two years thereafter	Field surveys	Moderate	Moderate

MONITORING PLAN (con't)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability
	Ecological Brook Trout Smallmouth Bass	Population Trend	Annual	Stream and Lake surveys	Moderate	Moderate
	Demand Species Walleye	Population Trend	Annual	Lake Survey	Moderate	Moderate
Monitor aquatic biodiversity	Fish Community *These species will be surveyed on same transect	Species Composition	Annual	Stream and Lake surveys	Moderate	Moderate

MONITORING PLAN (con t)

Source & Purpose of Monitoring Action	Activity Effect Practice Output	Unit of Measure	Frequency of Measure	Techniques and/or Data Sources	Expected Precision	Expected Reliability
Determine trends in fish habitat capability and appropriate stocking densities	Allegheny River, Reservoir, Stocked and Native Trout Streams	by Habitat Quality and Species Composition	Annual on sample basis	Stream and lake	Moderate	Low
Determine health of streams by monitoring trends in aquatic insect community structure	Streams	Community Structure and Species Composition	Annual on sample basis	Streams	Moderate	Moderate
Determine wildlife and fish utilization compared to planned use estimates	Fishing and Hunting	Success	Reservoir - 1/decade; Game take - 1/decade	Creel census, game take surveys	Moderate	Moderate

APPENDIX C

FOREST-WIDE SUMMARIES

Table C-1 Forest-wide Summary of Management Practices and Total Cost

Management Practice	Unit of Measure	Average Annual Amount Planned Decade 1 D	(D2)[2]	Projected Decade 2 D	(D2)
Dev. Recreation Area Const. & Expansion[1]					
Allegheny Reservoir Area					
Campgrounds	# of Areas	1	(1)	1	(1)
Motel/Restaurant Complex	# of Areas	1	(1)	0	(0)
Other Forest Areas					
Campgrounds	# of Areas	1	(1)	3	(3)
Boat Launches	# of areas	2	(2)	0	(0)
Dispersed Recreation					
Pedestrian Trail	miles	4.8	(4.1)	4.1	(3.4)
Motorized Winter	miles	1.1	(1.1)	1.1	(1.1)
Motorized Summer	miles	14.5	(14.5)	14.5	(14.5)
Wilderness Management	acres	9719	(9719)	9719	(9719)
Timber Practices					
Final Harvest - Clearcuts	acres	330	(330)	340	(270)
Final Harvest - Shelterwood	acres	2970	(2970)	3060	(2430)
Thinning	acres	9400	(9500)	7800	(10400
Timber Stand Improvement	acres	800	(700)	600	(800)
Selection	acres	600	(600)	0	(0)
Herbicide	acres	2000	(2000)	1800	(1500)
Fertilization	acres	2500	(2500)	1400	(1300)
Fencing	acres	400	400)	400	(400)
Planting	acres	200	200)	200	(200)
Site Prep for Natural Regeneration	acres	1800	1800)	1800	(1400)
Road Construction	miles	23.7	(24.7)	13.4	(18.7)
Road Reconstruction	miles	9	(10.1)	5.5	(7.6)
Wildlife and Fish Habitat Improvement					
Wildlife Habitat Imp. & Mtnce.	acres	2[illegible]	(2361)	2758	(2589)
Wildlife Structures	# of struct.	6	(6)	11	(8)[3]
Fish Structures - Lakes	# of struct	80	(80)	TBD	
Warm Water Lake Construction	# of lakes	1/dc	(1/dc)	1/dc	(1/dc)
Energy Mineral Development	acres	429	(4290)	429	(4290)
Common Variety Mineral Development	acres	8	(12)	6	(13)
TOTAL COST	M$	6,475		5,693	

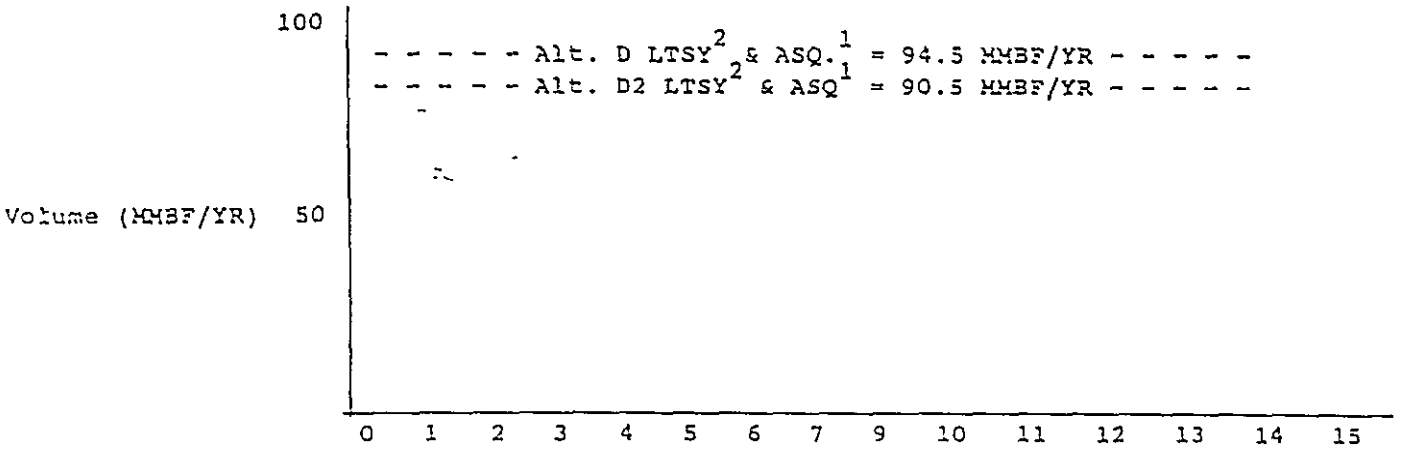
1 Unit of measure for this practice is the number of recreation areas to be completed within the entire decade not an average annual amount

2 D2 is a variation of the Forest Plan that projects the results if a high rate of oil and gas development is experienced during implementation.

3 TBD - To be determined based on fish habitat management plans.

Table C-2 Allowable Sale Quantity and Long-Term Sustained Yield Capacity

(Average annual yield per decade within the planning horizon equals long-term sustained yield; 945 million board feet of sawtimber and pulpwood per decade for Alternative D and 905 million for Alternative D2.)



1 Allowable Sale Quantity (ASQ)

The quantity of timber that may be sold from an area of land covered by the Forest Plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.

2 Long-Term Sustained Yield Capacity (LTSY)

The highest uniform wood yield from lands being managed for timber production that may be sustained under a specific intensity of managment consistent with the multiple-use objective.

ALLEGHENY NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

September 30, 1997

Amendment No. 7

Posting Notice: Amendments to this Forest Plan are numbered consecutively Check the last transmittal received for this Plan to see that the above amendment is received and posted Do not post this amendment until any missing ones are received and posted

Amendment No 7 makes the following changes to the page(s) specified

Page Code	Page Color	Superseded (Number of Pages)	New
p 4-99	Tan	1	2
pp 4-101 & 4-102	Tan	2	2
pp 4-108 & 4-109	Tan	2	2
pp 4-113 & 4-114	Tan	2	4
pp 4-116 - 4-118	Tan	3	5
pp 4-153 - 4-156	Tan	4	7
pp 4-163 - 4-165	Tan	3	6
p 4-179	Tan	1	4

Digest

p 4-99(a) & 4-99(b)	Adds a subsection for Human and Community Development under 1500 EXTERNAL RELATIONS and additional guidance under 1600 INFORMATION SERVICES
p 4-101	Inserts paragraph two regarding a "Leave No Trace" policy
p 4-102	Adds three paragraphs to the Visual Quality heading
p 4-108 & 4-109	Adds four items to the listing under the Signs heading
pp 4-113(a)-(c)	Adds sections 1500 EXTERNAL RELATIONS and 1600 INFORMATION SERVICES
p 4-114	Adds listing under the Recreation Sites heading
pp 4-116 & 4-117(a) & (b)	Adds last three paragraphs under the Visual Quality subsection, paragraph three under the Silvicultural Systems heading, and the last paragrph under the Temporary Openings Created heading
pp 4-118(a) & (b)	Adds section 2500 WATER AND SOIL MANAGEMENT

co 4-153(a) & (b)	Adds sections 1500 EXTERNAL RELATIONS and 1600 INFORMATION SERVICES
o 4-153(c)	Inserts paragraph four regarding a "Leave No Trace" policy.
o 4-154	Adds last paragraph
p 4-155	Adds first two paragraphs (Visual Quality), last paragraph under Silvicultural Systems heading, and last paragraph under Temporary Openings Created heading
co 4-156(a) & (b)	Adds paragraphs four through end of Riparian Area Management heading
co 4-163(a) & (b)	Adds sections 1500 EXTERNAL RELATIONS and 1600 INFORMATION SERVICES
o 4-163(c)	Inserts paragraph eight under the Recreation Site heading regarding a "Leave No Trace" policy
o 4-164	Adds last three paragraphs under Visual Quality heading.
co 4-165(a) & (b)	Adds Riparian Area Management subsection
co 4-179(a) - (d)	Adds Standards and Guidelines for the Buckaloons Historic District

JOHN E PALMER
Forest Supervisor

STANDARDS AND GUIDELINES FOR MANAGEMENT AREA 5
(An asterisk designates standards taken from the Eastern Regional Guide.)

1500 EXTERNAL RELATIONS

Search & Rescue

Motorized and mechanical equipment may be used only in life threatening situations for search and rescue with Forest Supervisor approval Operations will be coordinated with local county sheriff. The Forest Service will maintain control of search and rescue operations in Wilderness areas

- Horses or helicopters will be favored over wheeled vehicles.
- If vehicles are required, either snowmobile or low pressure balloon tires will be favored

Human & Community Development

Volunteers and personnel from other programs hosted by the Forest Service could be used to accomplish needed work within the river corridor. Encourage participation in the Pennsylvania Fish and Boat Commission's "Adopt-a-Stream" program and the DER Water Monitoring Program.

Provide technical assistance as requested to landowners desiring to implement corridor guides

1600 INFORMATION SERVICES

Information will generally be provided through use of the Recreation Opportunity Guide, maps, brochures, etc.

Interpretive information, if provided, will be outside of Wilderness boundaries

Publications should emphasize

- Outdoor ethics and no-trace camping,
- Weekday and winter use to those seeking more solitude, and
- Orienteering as a way to minimize use impacts, reduce people encounters, and increase solitude experience.

The information services provided for the Allegheny Wild and Scenic River are intended to satisfy the three information needs of users of the Allegheny River corridor These needs are directional, behavioral, and interpretive. The services will inform river users of recreational opportunities and laws and regulations pertaining to specific activities. Information will be

provided through a variety of media, including but not limited to signs, brochures, personal contacts, and news media.

- An information system using a variety of media should be developed for river users that would identify public lands, recreation opportunities, public facilities, landmarks on the rive, trail opportunities, regulations, safety messages, and special features/points of interest
- All information media should emphasize "Leave No Trace", respect for private property rights, and water safety throughout the corridor.
- Information and Interpretive media will be coordinated with the local agencies, Chambers of Commerce, Tourist Promotion Agencies, Oil Region Heritage Park, State agencies etc. to assure accuracy and eliminate redundancy.
- Design an Allegheny River brochure that lists the three classifications of Wild and Scenic Rivers, and explains that the Allegheny has a "recreational" classification, identifies the values that made the river worthy of being a National Wild and Scenic River, tells why it needs to be protected and what the user can do to protect it, and includes information on sensitive, threatened and endangered species.
- The Forest Service will cooperate with the Oil Region Heritage Park and others to develop an interpretation plan for the river that will be consistent throughout its length Interpretive information may include such themes as the riverine ecosystem, the outstanding remarkable values, cultural history, or the Allegheny Islands Wilderness

2300 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

*Manage vegetation only to protect Wilderness values or to protect adjacent property from fire or pests

Natural succession will be allowed to proceed as the dominant process

Use native plants for temporary soil stabilization Annuals will be used so as to favor natural succession.

Camping and day use will be permitted on the Allegheny River Islands, and non-motorized watercraft may be landed on the shoreline.

Emphasize a "Leave No Trace" policy where users are required to haul away their own trash and leave no trace of their visit

Trails

*Trail management will be compatible with the ROS objective of the area

Trail types appropriate to this management area are:

Pedestrian Summer
Pedestrian Winter

Trails may include two difficulty classes of More and Most Difficult experiences within the semi-primitive non-motorized ROS class

Off-Road Vehicles (ORV)

ORV use will not be permitted.

Cultural Resources

*Cultural resources will be evaluated for the National Register of Historic Places

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

*Cultural resource values within a Wilderness may be stabilized and preserved when these values are compatible with and enhance Wilderness values

*On-site cultural resource interpretation will not occur.

No scientific excavations will occur unless justified by providing scientific information not likely to be found elsewhere Any digs will be promptly restored to natural condition.

*Visual Quality

*Management activities should meet the visual quality objective of preservation or retention for all sensitivity levels, distance zones, and variety classes.

Vegetation will be allowed to evolve naturally within the forested riparian buffer, unless restoration work is necessary Restoration work will use native plants Maintain or enhance the streambank vegetation that provides screening of man-made facilities and activities.

Maintain or enhance the integrity of the Landscape Types 1 - 3 by allowing changes consistent with the future condition descriptions (pp 42-45, Allegheny W&S River FEIS)

Landscapes within the corridor will be managed under the visual quality objective of Retention which recommends that management activities not be visually evident to the average visitor Any managerent activity or development should be designed to blend with the form, line, color and texture of the natural surroundings

2300 TIMBER MANAGEMENT

*Timber is not harvested under this management goal

Salvage of timber damaged as a result of fire, storm, or pests will not occur, except to protect Wilderness values or to protect adjacent property from fire or pests.

Firewood

Firewood may be gathered in Wilderness, but only for use within the Wilderness boundary If significant resource damage is expected, gathering may be restricted by Forest Supervisor order

2500 WATER AND SOIL RESOURCE MANAGEMENT

*Control measures to mitigate erosion will commensurate with the soil characteristics, expected use, and managerent objectives of the area

*Limit watershed improvement projects to correcting problems caused by people and natural disasters that threaten downstream health and safety Abandoned oil and gas wells on federal mineral ownership will be plugged if the wells pose a safety hazard or are polluting surface or ground water.

Current water quality will be maintained in the Hickory Creek Watersned to protect instream values Variation in water quality may occur in response to natural elements.

Riparian Area Management

Public use of specific areas may be limited to protect water quality

Trails will be located to protect soil and water quality values

7100 ENGINEERING OPERATIONS

Surveying

Wilderness boundaries will be marked to a standard that will allow for identification

- Wilderness boundaries will be surveyed only where and when there is a threat of encroachment by other activities
- Wilderness boundaries will be posted at 100 foot intervals adjacent to private lands and at 300 foot intervals along roads

Signs

Trail signs may be provided within Wilderness boundaries.

- All signs will conform to Wilderness standards of rustic routed wood
- Signing within areas will be kept to a minimum and primarily used for direction and safety.
- Each of the Wilderness islands will be identified as belonging to the system
- Painted trail blazes are generally inappropriate within Wilderness areas Trails will be marked with axe blazes or rock cairns.
- Develop sign plan for the river corridor including inventory of existing signs, analysis of needs and standards of future signing
- Through signing, brochures and maps, provide distances between various river features and access sites
- for convenience and safety of river users.
- All informational signing within the river corridor on National Forest will be uniform in color and design as provided in the Forest Service Sign Handbook and River Sign Plan (To be developed). Signing along roads, trails and within recreation sites should be simple, easily read and organized

Solid Waste

Sewage systems will not be developed

7200 BUILDINGS AND STRUCTURES

No building or structures will be constructed, except as authorized by the act establishing the Wilderness

7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES	*Water Supply *Drinking water sources will not be developed *Emphasize and promote use of the carry-in/carry-out method of disposal. *Solid Waste *Landfill disposal sites will not be provided Biodegradable waste from dispersed recreation use may be burned or buried by users. Plastic, metal, and other waste must be carried out. Additional waste disposal regulations may be ordered by the Forest Supervisor to protect the Wilderness experience and environment.
7500 WATER STORAGE AND TRANSMISSION	Dams No dam construction will occur.
7700 TRANSPORTATION SYSTEM	Roads All roads will be eliminated from designated Wilderness areas, excepting those necessary for oil and gas recovery on outstanding rights or on private property.

1500 EXTERNAL RELATIONS

Human and Community Development

Volunteers and personnel from other programs hosted by the Forest Service could be used to accomplish needed work within the river corridor. Encourage participation in the Pennsylvania Fish and Boat Commission's "Adopt-a-Stream" program and the DER Water Monitoring Program.

Provide technical assistance as requested to landowners desiring to implement corridor guides.

1600 INFORMATION SERVICES

The information services provided for the Allegheny Wild and Scenic River are intended to satisby the three information needs of users of the Allegheny River corridor These needs are. directional, behavioral, and interpretive. The services will inform river users of recreational opportunities and laws and regulations pertaining to specific activities. Information will be provided through a variety of media, including but not limited to signs, brochures, personal contacts, and news media.

- Develop a sign plan for the river corridor including inventory of existing signs, analysis of needs and standards of future signing .
- Provide signing at access sites that informs users of the site location within the corridor, river regulations including water safety, emergency services, special interpretive features, and activities available in the area
- Provide signing on the river to enable river users to locate and land safely at the public access sites.
- Through signing, brochures, and maps provide distances between various river features and access sites for convenience and safety of river users.
- All informational signing within the river corridor on National Forest will be uniform in color and design as provided in the Forest Service Sign Handbook and River Sign Plan (To be developed). Signing along roads, trails and within recreation sites should be simple, easily read and organized.
- An information systen using a variety of media should be developed for river users that will identify public lands, recreation opportunities, public facilities, landmarks on the river, trail opportunities, regulations, safety messages, and special features/points of interest.

- All information media should emphasize "Leave No Trace or Pack-in Pack-out", respect private property rights , and water safety throughout the corridor
- Information and Interpretive media will be coordinated with the local agencies, Chambers of Commerce, Tourist Promotion Agencies, Oil Region Heritage Park, State agencies etc. to assure accuracy and eliminate redundancy
- Design an Allegheny River brochure that lists the three classifications of Wild and Scenic Rivers, and explains that the Allegheny has a "recreational" classification, identifies the values that made the river worthy of being a National Wild and Scenic River, tells why it needs to be protected and what the user can do to protect it, and includes information on sensitive, threatened and endangered species
- The Forest Service and the Pennsylvania Department of Environmental Resources will cooperate with and encourage riparian landowner organizations, local Chambers of Commerce, local governments, trail organizations, organized fishing groups, outfitters and guides, commercial establishments etc., to develop appropriate means of meeting the river users' recreational and informational needs.
- The Forest Service will cooperate with the Oil Region Heritage Park and others to develop an interpretation plan for the river that will be consistent throughout its length Interpretive information may include such themes as the riverine ecosystem, the outstanding remarkable values, cultural history, or the Allegheny Islands Wilderness

(On private land, it is recommended that signs should at least compliment the color and basic design of those on the National Forest and carry the Wild and Scenic River logo)

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management Planning

"Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity

The current aspen component should be retained

Within aspen inclusions, 20 percent of the area should be in the 0-9 year age class, and 20 percent of the area should be in the 10-19 year age class Regeneration cuts should be relatively small (up to 10 acres in size)

Regeneration cutting of aspen should be done during the dormant season Retain at least one downed log in each regeneration cutting Each such log should be more than 10 inches in diameter.

Old growth habitat should be provided on a minimum of 10 percent of the area and should comprise at least 100 of each 1,000 acres.

Retain the following snags per acre:

Tree Size	No Snags
10" to 16" DBH	3
18" to 24" DBH	3
Greater than 24" DBH	3

2300 RECREATION MANAGEMENT

Recreation Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

*Selected areas, trails, and roads may be closed where appropriate to motorized vehicles during specific periods, such as hunting seasons, to provide for non-motorized experiences

Provide opportunities for a semi-primitive motorized ROS class recreation experience The roads necessary for wildlife management make the recreation setting a motorized class Occasionally, local roads will remain open for access or to provide ORV opportunities Hiking, skiing, hunting, and mountain biking will be encouraged on closed roads.

Three dispersed recreation management intensities were options within this area which varied by quantity and quality of trail building and recreation management.

- Low Intensity is defined as maintaining the current investments. We would maintain the existing trail system and would not develop any new trails
- Medium Intensity is mid-way between Low and High Intensity.
- High Intensity established the upper limit on trail densities for each prescription by the respective Recreation Opportunity Spectrum (ROS) class

If high intensity oil and gas development occurs in this management area, we will make no new recreation investments Manage using a low recreation management intensity

The output objectives and the proposed and probable practice amounts are a result of the high intensity being selected

Recreation Sites

Recreation sites may be provided at development scale 3 or less. Some of the reservoir campgrounds which can be reached only by boat are within this management area Generally these sites will be less than 50 campsites, will have vault toilets, carry-in and carry-out garbage policy, and hand pump water supply

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites " Sites may be closed for economic or safety reasons

Alternative 2 of the Allegheny W&S River FEIS allows the development of two new access sites within the ANF proclamation boundary: 1) Tanbark and 2) Indian Valley (pending funding).

- Facilities provided for recreational activities will be compatible with the management objectives of this document.
- Recreational facilities will be designed to accomplish the future condition described on pages 27-28 of the Draft Management Plan
- Emphasize a "Leave No Trace" policy where users are required to haul away their own trash and leave no trace of their visit ("Leave No Trace "is a national program used by various federal agencies)
- Riparian vegetative buffers will be restored and maintained at access sites to screen man made elements as seen from the river
- Where feasible, boat launch sites will be designed to accommodate motorized watercraft as well as non-motorized watercraft.
- Design of all facilities should generally be in keeping with the surrounding form, line, color and texture of the river environment
- Maintain dispersed campsites to standards that protect the natural resources, respect private property, and maintains or enhances the recreation experience opportunities being provided Develop a dispersed campsite management plan that includes inventory, analysis and recommendations for management standards

Trails

*Trail management will be compatible with the ROS objective of semi-primitive motorized

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification Variety Class - (A) Distinction, (B) Common, (C) Minimal Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive.

Vegetation will be allowed to evolve naturally within the forested riparian buffer, unless restoration work is necessary Restoration work will use native plants. Maintain or enhance the streambank vegetation that provides screening of man-made facilities and activities.

Maintain or enhance the integrity of the Landscape Types 1 - 3 by allowing changes consistent with the future condition descriptions (pp 42-45, Allegheny W&S River FEIS).

Landscapes within the corridor will be managed under the visual quality objective of Retention which recommends that management activities not be visually evident to the average visitor Any management activity or development should be designed to blend with the form, line, color and texture of the natural surroundings.

2400 TIMBER MANAGEMENT

Silviculture Systems

Even-aged and uneven-aged silvicultural systems will be used to achieve the wildlife and recreation management objectives

Even-aged management will be used to benefit wildlife by increasing horizontal habitat diversity It fulfills important habitat requirements for the wild turkey, black bear, white-tailed deer, management indicator species, and a variety of other small-game and non-game species It may be used also for increasing visual diversity and providing viewpoints for recreationists in desirable locations.

If even-aged management is practiced, openings should be kept relatively small and irregular in shape to maintain the visual character of the corridor.

Uneven-aged management will be used to benefit wildlife by increasing mast and browse production, improving tree species composition and diversity, and increasing vertical habitat diversity It will be used where

cutting is planned in visually sensitive areas to provide a continuous canopy or visual variety in recreation travelways and use areas

Harvesting Cutting Methods

Seasonal restrictions will occur to protect or manage the featured wildlife species and/or provide non-motorized recreational opportunities

Temporary Openings Created by the Application of Even-Aged Silviculture

Temporary openings created by even-aged management will usually not exceed 20 acres. In the following cases, the size may exceed 20 acres:

- When consistent with wildlife and recreation objectives, the size may be as large as 25 acres;
- Where larger units, not to exceed 40 acres, will produce a more desirable combination of net public benefits,
- On an individual sale basis after 60 days public notice and review by the Regional Forester;
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm

Creation and size definition of temporary openings will be governed by the wildlife management objectives

Openings that can be seen from the river should be relatively small in size and of irregular shape, so that they blend into the landscape.

Frequency of Entry and Intensity

Timber harvesting will be necessary to achieve the wildlife management objectives Sales will be scheduled to improve wildlife habitat, and the treatments will be based on an inventory of the existing habitat conditions The timber harvest will vary in intensity within this management area to achieve both the wildlife and recreation management objectives.

The earliest age for regeneration cutting by timber type and management period is the following

Timber Type	Minimum Rotation Age by Management Period (Decade) 1-2	3	4-15
Northern Hardwoods (Beech Hemlock)[1]	120	120	120
Northern Hardwoods (miscellaneous)[2]	90	100	120
Allegheny Hardwoods	≥80	≥100	≥100
Oak	≥80	≥100	≥120
Aspen	40	40	40
Conifers (plantations)	100	100	100

1 - Stands comprised of a plurality of Beech or Beech/Hemlock basal area
2 - Stands not comprised of a plurality of Beech or Beech/ Hemlock

Firewood

Firewood will be available for public use only when its removal is compatible with the wildlife management objective for the stand Only designated material may be removed for fuelwood purposes.

Pulpwood

Pulpwood on commercial timber sales will be addressed by either:

1) Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed. Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription.
2) Mark or designate all merchantable products in all cut trees, but make pulpwood removal optional Cut pole timber with KV funds, if the option is not taken

Timber Stand Improvement

The improvement of stands of timber will be based upon wildlife or recreation management objectives For example, this technique may be utilized to increase mast production, improve species composition and diversity, alter vertical stand structure, or improve visual quality This activity may be conducted non-commercially or commercially

Reforestation

Reforest all areas which receive a final harvest cut except where the objective is to create a permanent opening

Riparian Area Management

Riparian area management includes the riparian zone and the riparian zone of influence (see Figure A, page 10 of the Draft Management Plan).

Perennial Streams

Along perennial streams, streamside management zones would be established to meet fisheries and wildlife management objectives The distances, listed in Table III-1, are for each side of a stream, and could be located within a wider riparian area

STREAM WIDTH (bankfull)	STREAMSIDE MANAGEMENT ZONE
Defined stream channel <10'	75' +2/1% slope
>10'	100' +2/1% slope

As stream width increases, the size of large woody debris must also increase to be effective in the formation of quality fish habitat. To provide long-term input of large woody debris to a stream, a sufficient number of trees within the streamside management zone should be allowed to grow to biological maturity. These trees, as some begin to fall naturally into streams, create habitat diversity for aquatic life These zones do not necessarily follow riparian area boundaries and are the most effect effective on tributaries to the Allegheny River

Intermittent Streams

Intermittent streams within the corridor should be managed to·

- Maintain trees that are providing streambank stability,
- Maintain trees growing within a stream channel for stability purposes;
- Provide for continued input of leaf litter (intermittent streams transport leaf litter by periodic flushings into downstream reaches of perennial waters, as well as provide habitat for aquatic invertebrates within these intermittent channels [Williams and Hynes 1976, Williams and Hynes 1977]), and

- Continue with the current Forest Plan standard and guideline of a suggested filter strip width during timber harvesting of 50'-2'/1% slope (Forest Plan page 4-24), or the actual size of the riparian area, whichever is larger

2600 WILDLIFE HABITAT MANAGEMENT

*Protect existing spring seeps and other water areas critical to wintering wildlife.

*Provide wetland habitats to meet the requirements of management indicator species.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

*Manage permanent openings and grasslands in upland forest areas to meet needs of management indicator species.

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

1500 EXTERNAL RELATIONS

Human and Community Development

Volunteers and personnel from other programs hosted by the Forest Service could be used to accomplish needed work within the river corridor. Encourage participation in the Pennsylvania Fish and Boat Commission's "Adopt-a-Stream" program and the DER Water Monitoring Program.

Provide technical assistance as requested to landowners desiring to implement corridor guides.

1600 INFORMATION SERVICES

The information services provided for the Allegheny Wild and Scenic River are intended to satisfy the three information needs of users of the Allegheny River corridor These needs are directional, behavioral, and interpretive. The services will inform river users of recreational opportunities and laws and regulations pertaining to specific activities. Information will be provided through a variety of media, including but not limited to signs, brochures, personal contacts, and news media.

- Develop a sign plan for the river corridor including inventory of existing signs, analysis of needs and standards of future signing
- Provide signing on the river to enable river users to locate and land safely at the public access sites
- Through signing, brochures, and maps provide distances between various river features and access sites for convenience and safety of river users
- All informational signing within the river corridor on National Forest will be uniform in color and design as provided in the Forest Service Sign Handbook and River Sign Plan (To be developed). Signing along roads, trails and within recreation sites should be simple, easily read and organized.
- An information system using a variety of media should be developed for river users that will identify public lands, recreation opportunities, public facilities, landmarks on the river, trail opportunities, regulations, safety messages, and special features/points of interest
- All information media should emphasize "Leave No Trace or Pack-in Pack-out", respect private property rights , and water safety throughout the corridor

- Information and Interpretive media will be coordinated with the local agencies, Chambers of Commerce, Tourist Promotion Agencies, Oil Region Heritage Park, State agencies etc. to assure accuracy and eliminate redundancy.
- Design an Allegheny River brochure that lists the three classifications of Wild and Scenic Rivers, and explains that the Allegheny has a "recreational" classification, identifies the values that made the river worthy of being a National Wild and Scenic River, tells why it needs to be protected and what the user can do to protect it, and includes information on sensitive, threatened and endangered species.
- The Forest Service and the Pennsylvania Department of Environmental Resources will cooperate with and encourage riparian landowner organizations, local Chambers of Commerce, local governments, trail organizations, organized fishing groups, outfitters and guides, commercial establishments etc., to develop appropriate means of meeting the river users' recreational and informational needs
- The Forest Service will cooperate with the Oil Region Heritage Park and others to develop an interpretation plan for the river that will be consistent throughout its length. Interpretive information may include such themes as the riverine ecosystem, the outstanding remarkable values, cultural history, or the Allegheny Islands Wilderness

(On private land, it is recommended that signs should at least compliment the color and basic design of those on National Forest and carry the Wild and Scenic River logo)

2300 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetation Management

Vegetative management shall be done only to maintain or enhance existing recreation, wildlife, or watershed values, except to facilitate private mineral resource exploration and development

2310 RECREATION MANAGEMENT

Opportunities

Protect and enhance the existing opportunities for semi-primitive motorized and non-motorized recreation experiences

Semi-primitive motorized ROS class recreation experiences will be emphasized in the MPA

Non-motorized recreation opportunities will be emphasized on the interior of the NRA in the existing undeveloped portions

Public motorized vehicle use will not be permitted except for motorized use on the Allegheny Reservoir and vehicles in the developed recreation areas

Recreation Sites

With the exception of existing sites, recreation sites may be provided at development scale 3 or less. Some of the reservoir "boat-to" campgrounds are within this management goal. Generally these sites will have less than 50 campsites, with vault toilets, carry-in and carry-out garbage policy, and hand pump water supplies

Maintenance of sites will follow guidelines contained in FSM 2330, referenced handbooks, and ED&T #9099 titled "Cleaning Recreation Sites " Sites may be closed for economic or safety reasons

Where possible, developed recreation facilities (permanent campgrounds, etc.) should be limited to those general areas where they already occur and should not be planned in the more remote and wild areas.

Emphasize a "Leave No Trace" policy where users are required to haul away their own trash and leave no trace of their visit.

*Location of recreational developments will be determined with priority given to correcting health and safetyproblems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

Trails

*Trail management will be compatible with the ROS objectives.

Trail types appropriate to this management area are

Pedestrian Summer
Equestrian Summer
Pedestrian Winter

The choice of which type to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies, and plans of private sector at the time of implementation

Trails may include all three difficulty classes of Easiest, More, and Most Difficult to provided a full range of experiences

Interpretation

At trailheads into the management area, personal contact, brochure racks, and bulletin boards will be utilized to interpret the environment and inform users about proper use of the area.

Off-Road Vehicles (ORV)

*Use of motorized vehicles off roads will not be permitted in the NRA. Exceptions include use of administrative vehicles, emergency vehicles, use authorized by permit or contract (relating to outstanding private OGM rights)

*Cultural Resources

*Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

*Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented

*Interpretation of cultural resources should be compatible with the natural character and recreation opportunities of this area

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE						
	FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	R	R	R	R	PR	PR
Class B	R	PR	PR	PR	PR	M	M
Class C	PR	PR	PR	PR	M	M	M

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MM) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middle-ground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive

Vegetation will be allowed to evolve naturally within the forested riparian buffer, unless restoration work is necessary Restoration work will use native plants Maintain or enhance the streambank vegetation that provides screening of man-made facilities and activities

Maintain or enhance the integrity of the Landscape Types 1 - 3 by allowing changes consistent with the future condition descriptions (pp 42-45, Allegheny W&S River FEIS).

Landscapes within the corridor will be managed under the visual quality objective of Retention which recommends that management activities not be visually evident to the average visitor. Any management activity or development should be designed to blend with the form, line, color and texture of the natural surroundings.

2400 TIMBER MANAGEMENT

Silvicultural Systems

Timber will be harvested only to achieve wildlife and recreation management objectives.

Uneven-aged management or salvage may be an option used to maintain browse and mast production around existing habitat improvements to maintain continuous canopy in visually sensitive areas, or to provide visual variety in recreation travelways or use areas.

Even-aged management may be an option for creating or maintaining permanent openings for wildlife; for increasing visual variety; and providing viewpoints for recreationists.

When even-aged management is used, openings should be relatively small and irregular in shape so that treatments blend in with the landscape

Temporary Openings Created by the Application of Even-aged Silviculture

Temporary openings created by even-aged management will generally not exceed ten acres, except as provided below:

- On an individual sale basis after 60 days public notice and review by the Regional Forester.
- As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm.

Openings that can be seen from the river should be relatively small in size and of irregular shape, so that they blend into the landscape

Frequency of Entry and Intensity

A limited amount of commercial timber sales may be necessary to achieve wildlife management objectives.

Timber harvest is unscheduled and will vary in intensity

Firewood

Firewood may be gathered for use within the NRA boundary If significant resource damage is expected, gathering may be restricted by Forest Supervisor order.

Reforestation

Reforestation will be done to meet wildlife and recreation objectives.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Riparian Area Management

Riparian areas will be managed to emphasize riparian dependent resources which contribute to the objectives of this management area Such resources include wildlife habitat, fish habitat in the Allegheny River, Allegheny Reservoir, and streams; and dispersed recreation opportunities. Appropriate activities in riparian areas may include wildlife and fish habitat improvement, and trail construction.

Public use of specific areas may be limited to protect water quality.

Trails will be located to protect soil and water quality values

Riparian area management includes the riparian zone and the riparian zone of influence (see Figure A, page10 of the Draft Management plan)

1) Perennial Streams

Along perennial streams, streamside management zones would be established to meet fisheries and wildlife management objectives The distances, listed in the following table, are for each side of a stream, and could be located within a wider riparian area

Streamside Management Zone Distances

STREAM WIDTH (bankfull)	STREAMSIDE MANAGEMENT ZONE
Defined stream channel <10'	75' -2/1% slope
>10'	100' +2/1% slope

As stream width increases, the size of large woody debris must also increase to be effective in the formation of quality fish habitat To provide long-term input of large woody debris to a stream, a sufficient number of trees within the streamside management zone should be allowed to grow to biological maturity. These trees, as some begin to fall naturally into streams, create habitat diversity for aquatic life These zones do not necessarily follow riparian area boundaries and are the most effect effective on tributaries to the Allegheny River

2) Intermittent Streams

Intermittent streams within the corridor should be managed to

- maintain trees that are providing streambank stability,
- maintain trees growing within a stream channel for stability purposes;
- provide for continued input of leaf litter (intermittent streams transport leaf litter by periodic flushings into downstream reaches of perennial waters, as well as provide habitat for aquatic invertebrates within these intermittent channels [Williams and Hynes 1976, Williams and Hynes 1977]), and
- continue with the current Forest Plan standard and guideline of a suggested filter strip width during timber harvesting of 50'-2'/1% slope (Forest Plan page 4-24), or the actual size of the riparian area, whichever is larger

1111 WILDLIFE HABITAT MANAGEMENT

*Provide wetland habitats to meet the requirements of management indicator species

*Provide special habitat requirements necessary to maintain viable populations of those species that require isolation.

*Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage

1500 EXTERNAL RELATIONS

Human and Community Development

Volunteers and personnel from other programs hosted by the Forest Service could be used to accomplish needed work within the river corridor. Encourage participation in the Pennsylvania Fish and Boat Commission's "Adopt-a-Stream" program and the DER Water Monitoring Program.

Provide technical assistance as requested to landowners desiring to implement corridor guides.

1600 INFORMATION SERVICES

The information services provided for the Allegheny Wild and Scenic River are intended to satisfy the three information needs of users of the Allegheny River corridor These needs are directional, behavioral, and interpretive. The services will inform river users of recreational opportunities and laws and regulations pertaining to specific activities. Information will be provided through a variety of media, including but not limited to signs, brochures, personal contacts, and news media.

- Develop a sign plan for the river corridor including inventory of existing signs, analysis of needs and standards of future signing .
- Provide signing at access sites that informs users of the site location within the corridor, river regulations including water safety, emergency services, special interpretive features, and activities available in the area
- Provide signing on the river to enable river users to locate and land safely at the public access sites
- Through signing, brochures, and maps provide distances between various river features and access sites for convenience and safety of river users.
- All informational signing within the river corridor on National Forest will be uniform in color and design as provided in the Forest Service Sign Handbook and River Sign Plan (To be developed) Signing along roads, trails and within recreation sites should be simple, easily read and organized.
- An information system using a variety of media should be developed for river users that will identify public lands, recreation opportunities, public facilities, landmarks on the river, trail opportunities, regulations, safety messages, and special features/points of interest.

- All information media should emphasize "Leave No Trace or Pack-in Pack-out", respect private property rights, and water safety throughout the corridor
- Information and Interpretive media will be coordinated with the local agencies, Chambers of Commerce, Tourist Promotion Agencies, Oil Region Heritage Park, State agencies etc to assure accuracy and eliminate redundancy
- Design an Allegheny River brochure that lists the three classifications of Wild and Scenic Rivers, and explains that the Allegheny has a "recreational" classification, identifies the values that made the river worthy of being a National Wild and Scenic River, tells why it needs to be protected and what the user can do to protect it, and includes information on sensitive, threatened and endangered species.
- The Forest Service and the Pennsylvania Department of Environmental Resources will cooperate with and encourage riparian landowner organizations, local Chambers of Commerce, local governments, trail organizations, organized fishing groups, outfitters and guides, commercial establishments etc., to develop appropriate means of meeting the river users' recreational and informational needs
- The Forest Service will cooperate with the Oil Region Heritage Park and others to develop an interpretation plan for the river that will be consistent throughout its length Interpretive information may include such themes as the riverine ecosystem, the outstanding remarkable values, cultural history, or the Allegheny Islands Wilderness

(It is recommended that on private land , signs should at least compliment the color and basic design of those on National Forest and carry the Wild and Scenic River logo)

2310 RECREATION MANAGEMENT

Opportunities

*Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand

*Feature Rural ROS class recreation opportunities

Recreation Sites

Construction of new sites will occur at development scale 4 or 5 Sites will be larger than 50 campsites or 250 PAOT. The sites will usually have pressure water systems, sewage treatment plants, hot showers, paved service roads, and outdoor lighting

All structures and facilities will be designed and located to maintain a natural or rustic appearance.

Structures will not be more than two stories high.

Natural building materials, such as stone and wood, will be used on the exterior of all structures.

Earth-tone colors will be used for all exterior finishes

The visual quality objectives will be met primarily through vegetative screening of structures seen from a distance.

These sites may be developed and operated by the private sector under permit to the U S Government

Emphasize a "Leave No Trace Policy" where users are required to haul away their own trash and leave no trace of their visit

Trails

*Trail management will be compatible with the ROS objective

Trail types appropriate for this management area are:

Motorized Summer
Pedestrian Summer
Equestrian Summer
Motorized Winter
Pedestrian Winter

The choice of trails to be constructed will be based on analysis of demand, existing supply (both public and private), suitable locations, plans of other agencies and plans of private sector at the time of implementation

Trails may include two difficulty classes of Easiest, and More Difficult to provide a range of experiences within the Rural ROS class

Interpretation

In this area, manned interpretive and information facilities may be utilized to inform and educate Forest visitors

Visual Quality

Management activities should meet the Visual Quality Objectives (VQO) displayed in the chart below by sensitivity levels, distance zones, and variety classes.

VARIETY CLASS	SENSITIVITY LEVEL & DISTANCE ZONE FG1	MG1	BG1	FG2	MG2	BG2	3
Class A	R	PR	PP	PR	M	M	M
Class B	PR	M	M	PR	M	MM	M
Class C	PR	M	M	M	MM	MM	MM

Visual Quality Objectives - (R) Retention, (PR) Partial Retention, (M) Modification, (MI) Maximum Modification
Variety Class - (A) Distinction, (B) Common, (C) Minimal
Visual Distance Zone - (FG) Foreground, (MG) Middleground, (BG) Background
Sensitivity Level - (1) Most Sensitive, (2) Sensitive, (3) Least Sensitive.

Vegetation will be allowed to evolve naturally within the forested riparian buffer, unless restoration work is necessary. Restoration work will use native plants Maintain or enhance the streambank vegetation that provides screening of man-made facilities and activities.

Maintain or enhance the integrity of the Landscape Types 1 - 3 by allowing changes consistent with the future condition descriptions (pp 42-45, Allegheny W&S River FEIS)

Landscapes within the corridor will be managed under the visual quality objective of Retention which recommends that management activities not be visually evident to the average visitor Any management activity or development should be designed to blend with the form, line, color and texture of the natural surroundings

Cultural Resources

- Priorities will be set for evaluation of cultural resources for the National Register of Historic Places.

- Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented

- Emphasize development and interpretation of significant cultural resources to enhance recreation opportunities

Interpretation may occur during the evaluation or the excavation of major sites, and the excavation may be featured as well as the findings of the evaluation or excavation.

2400 TIMBER MANAGEMENT

Silvicultural Systems

Timber will be managed for visual, recreational, and safety purposes in the developed area. Single tree selection and group selection will be emphasized.

Salvage of timber products may occur in developed areas.

Whole tree removal will be emphasized in developed areas.

A vegetative management plan should be developed for each area and address the size of temporary openings.

Timber harvest is unscheduled

Harvesting may be restricted to periods of low recreation use to minimize user conflict

Firewood

Fuelwood may be made available for public use

Pulpwood

Mark or designate all merchantable products in all cut trees and require that they be paid for, cut, and removed Undesirable saplings will be removed with KV funds, if necessary, to meet the cutting prescription

Reforestation and Timber Stand Improvement

These activities will usually not occur except when necessary to achieve the management objectives of the area or to protect adjacent land owners from fire or pests

2500 WATER AND SOIL RESOURCE MANAGEMENT

Intensive structural and nonstructural practices for erosion control should be used as necessary to prevent soil loss and water quality degradation in areas receiving heavy recreation use Practices may include paving, terracing, gabion installation, rip-rapping, etc

Riparian Area Management

Riparian area management includes the riparian zone and the riparian zone of influence (see Figure A, page 10 of the Final Allegheny W&S River Management Plan)

1) Perennial Streams

Along perennial streams, streamside management zones would be established to meet fisheries and wildlife management objectives. The distances, listed in Table III-1, are for each side of a stream, and could be located within a wider riparian area.

Streamside Management Zone Distances

STREAM WIDTH (bankfull)	STREAMSIDE MANAGEMENT ZONE
Defined stream channel <10'	75' +2/1% slope
>10'	100' +2/1% slope

As stream width increases, the size of large woody debris must also increase to be effective in the formation of quality fish habitat To provide long-term input of large woody debris to a stream, a sufficient number of trees within the streamside management zone should be allowed to grow to biological maturity. These trees, as some begin to fall naturally into streams, create habitat diversity for aquatic life. These zones do not necessarily follow riparian area boundaries and are the most effect effective on tributaries to the Allegheny River.

2) Intermittent Streams

Intermittent streams within the corridor should be managed to

- maintain trees that are providing streambank stability,
- maintain trees growing within a stream channel for stability purposes,
- provide for continued input of leaf litter (intermittent streams transport leaf litter by periodic flushings into downstream reaches of perennial waters, as well as provide habitat for aquatic invertebrates within these intermittent channels [Williams and Hynes 1976, Williams and Hynes 1977]), and
- continue with the current Forest Plan standard and guideline of a suggested filter strip width during timber harvesting of 50'+2'/1% slope (Forest Plan page 4-24), or the actual size of the riparian area, whichever is larger

5400 LAND OWNERSHIP

Subsurface

Private mineral rights should be acquired as necessary to protect research values

Priority will be given to the Tionesta Research Natural Area.

7700 TRANSPORTATION SYSTEM

Local roads will be Traffic Service Level "D". These local roads will be closed to public vehicles.

BUCKALOONS HISTORIC DISTRICT

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative

Plant a diversity of native warm season-grasses (including the reintroduction of "Brokenstraw grass" to the area in selected locations) to prevent adverse impacts upon cultural resources and recreation

2300 RECREATION MANAGEMENT

Opportunities

Manage the area to provide the opportunity to provide opportunity for recreational activities oriented to understanding and appreciating the area for its heritage and ecological values.

Enhancing hunting opportunities (pheasants, rabbits, waterfowl) is permitted

Trails

Manage trails within the area to provide a quality heritage experience

Provide and maintain a variety of trail settings from primitive to developed

Off-Road Vehicles (ORV)

ORV use will not be permitted

Heritage Resources

Ensure that prehistoric, historic, archaeological and natural history sites and values are studied, preserved, or protected in accordance with cultural re source regulations Provide for interpretation and enjoyment of these sites, along with provisions for developed and dispersed recreation and protection of visual quality

Provide for safe use of the sites.

Coordinate with the Carnegie Museum of Natural History, the Warren County historical Society, the Pennsylvania Historic Museum Commission, the Seneca Nation, and the Clinton E Wilder Museum to ensure protection and enhancement of the cultural values and recreational resource values of this archaeological district

Restrict hunter conflicts with heritage resources

Conduct cultural resource studies and surveys which identify cultural resource values associated with this area.

Maintain and enhance cultural resource values

Implement specific standards for site-specific management and protection of historical values of the area.

Seek protection and access to prehistoric and historic sites through available means such as scenic easements or cooperative agreements

Interpretive

Provide interpretive services which enhance public understanding and appreciation of cultural and ecological values

Sufficiently mark historic foundation and locations of special interest using standard signs so that users can locate and learn about the history and prehistory of the area.

Visual

Manage visual resource to enhance visual appeal and to rehabilitate historic landscapes that do not meet adopted visual quality objectives

2400 TIMBER MANAGEMENT

In Buckaloons, timber harvesting will only be implemented to achieve heritage resource and wildlife managment objectives

2500 WATER AND SOIL RESOURCE MANAGEMENT

Historic landtypes and landscape will be encouraged

Native plant material will be required for water and site restoration

Riparian Area Management

Creation or enhancement of riparian-dependent resources, such as wildlife and fish habitat or recreation opportunities, is highly appropriate

Riparian area management includes the riparian zone and the riparian zone of influence (see Figure A, page 10 of the Allegheny W&S River Management Plan).

1) Perennial Streams

Along perennial streams, streamside management zones would be established to meet fisheries and wildlife management objectives. The distances, listed in the following table, are for each side of a stream, and could be located within a wider riparian area.

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- provide for continued input of leaf litter (intermittent streams transport leaf litter by periodic flushings into downstream reaches of perennial waters, as well as provide habitat for aquatic invertebrates within these intermittent channels [Williams and Hynes 1976, Williams and Hynes 1977]), and
- continue with the current Forest Plan standard and guideline of a suggested filter strip width during timber harvesting of 50'-2'/1% slope (p. 4-24), or the actual size of the riparian area, whichever is larger

2600 WILDLIFE MANAGEMENT	Manage small game habitat within adopted Visual Quality Objectives In the Buckaloons Historic District, wildlife habitat improvements will emphasize habitat enhancement and maintenance for early successional species and wetland/riparian species. Potential projects include the establishment of native warm season grasses, mowing and/or burning of some field, cutting of some large woody vegetation to set back succession, and planting herbaceous species to enhance wetland/prairie areas for wildlife.
2700 SPECIAL USES	<u>Utility Transmission Corridors</u> Designate as an avoidance area for potential utility corridor
2800 MINERALS AND GEOLOGY	All minerals under the Buckaloons Historic District are federally owned. No surface occupancy stipulations are applicable.
5100 FIRE MANAGEMENT	Limit size of individual wildfires Treat activity and natural fuels to meet the area's resource and visual objectives Use prescribed fire from planned ignitions as needed to achieve Forest Plan Direction for wildlife, recreation and heritage resource management Confine, contain, or control wildfires Be consistent with adjacent area management direction Protect heritage resources during suppression activities.
7100 TRANSPORTATION SYSTEMS	Protect cultural and recreational resource values when developing road access from or through the area. Allow new road access across the area when no other reasonable alternatives exist and then only with maximum protection of historical, visual, and recreational values. Mitigate effects of roads on recreational and cultural values.

ALLEGHENY NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

September 30, 1997

Amendment No. 8

Posting Notice Amendments to this Forest Plan are numbered consecutively Check the last transmittal received for this Plan to see that the above amendment is received and posted Do not post this amendment until any missing ones are received and posted

Amendment No 8 makes the following change

Page Code	Page Color	Superseded (Number of Pages)	New
p 4-41	Ivory	1	1

Digest.

p 4-41 Adds the final paragraph on the page which addresses the management of vegetation in electric utility rights-of-way crossing the Allegheny National Forest

JOHN E PALMER
Forest Supervisor

Enhance the habitat of "Species of Special Concern in Pennsylvania " Their letters of concurrent are on file in the Forest Supervisor's office

2700 SPECIAL USE MANAGEMENT

Permittees must meet the same environmental standards that apply to Forest Service facilities

The burden of proof is upon the special use applicant to justify need for use of National Forest lands.

The establishment of commercial and tourist service facilities will be considered where private lands are not available for such development, and where development on federal lands can be demonstrated to provide a service fulfilling a public need beyond the state and local context

Cabin permits on National Forest land will be terminated prior to December 31, 1996 Recreation residences in established areas will be reviewed and phased out prior to December 31, 996, when such action is in the public interest

Consolidate right-of-way uses into use corridors whenever practical Locate utility corridors to avoid heavily-used recreation areas and special ecological or other special interest sites

Special use permittees will be required to bury all new pipelines, telephone lines, and powerlines up to and including 34 5 KV, except those to be placed on existing poles or towers

Forest Supervisor may approve exceptions when

- The applicant provides evidence that burying the utility line is not feasible, and/or
- An environmental assessment of alternatives supports the exception

All rights-of-way except continuously used road surfaces on National Forest land should be stabilized through seeding or other natural means

Cooperative trout nurseries operating under special use permits from the Allegheny National Forest shall receive approval from the appropriate agency before planting trout in waters on the National Forest.

Powerline rights-of-way crossing National Forest land shall be managed in an environmentally-sensitive fashion to provide safe, reliable, and efficient service to consumers Management of vegetation shall follow the guidelines established for Alternative 2 in the EIS for Vegetation Management on Electric Utility Rights-of-Way (Allegheny National Forest et al, May 1997) As new information becomes available, other herbicides and/or treatment techniques may be considered for use.

Forest-wide Standards and Guidelines

2800 MINERALS AND GEOLOGY

Federal Minerals

Explorations

*All lands will be available for exploration that does not disturb the land surface.

Most lands outside the National Recreation Areas and Wilderness will be available for surface-disturbing exploration (including core drilling)

*The reasons for closing an area to land-disturbing exploration must be supportable and documented.

Development

The Forest Service will encourage inventory and development of federal minerals, especially minerals of compelling domestic significance, as defined by the U.S Department of Interior. Developments will be designed, constructed, and operated in a manner that is compatible with the surface resource objectives of the management area

Compatibility determination for the Federal oil and gas ownership will be by an Environmental Assessment. A similar compatibility analysis will be done for oil and gas properties acquired by the federal government in the future.

Federal Minerals within the Wilderness Area and the National Recreation Areas were withdrawn from leasing by the passage of the Pennsylvania Wilderness Act of 1984

Private Minerals (includes oil, gas, and minerals outstanding or reserved in deeds)

*Land management decisions must not preclude the ability of private mineral owners to make reasonable use of the surface, as defined by deed and public law

ALLEGHENY NATIONAL FOREST
LAND AND RESOURCE MANAGEMENT PLAN

September 30, 1997

Amendment No. 9

Posting Notice: Amendments to this Forest Plan are numbered consecutively Check the last transmittal received for this Plan to see that the above amendment is received and posted Do not post this amendment until any missing ones are received and posted

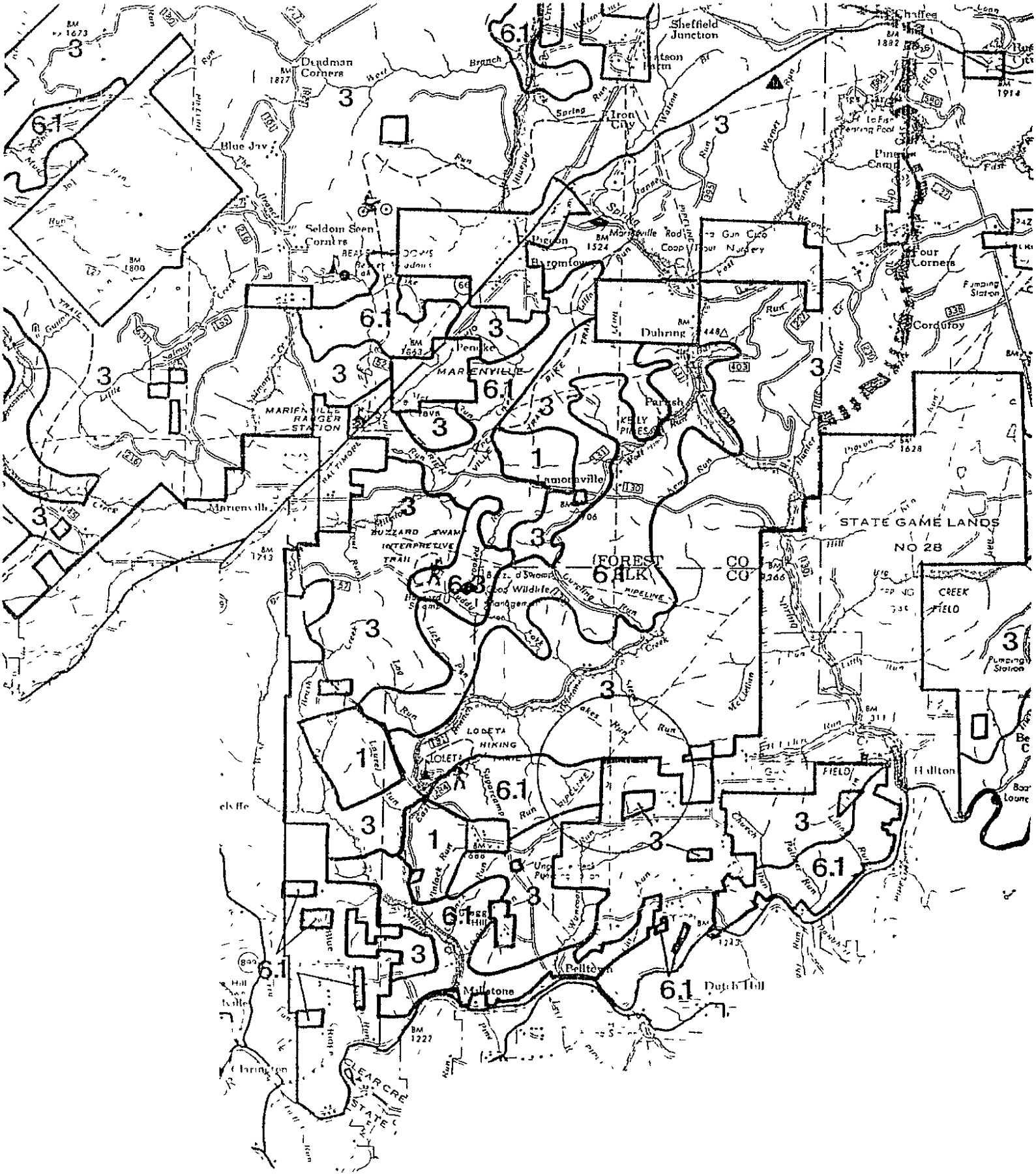
Digest of changes: Amendment No 9 makes the following change to the page specified

Page	Location	Change
p 4-82	Heading	Changes 328,000 acres to *327,998*

In an effort to reduce duplication and mailing costs for the minor changes made to page 4-82, we ask that you make the appropriate acreage changes in your copy or the Forest Plan

In addition, we are including a copy of the Forest Plan Management Area map identifying the approximate location of the 2-acre parcel removed from National Forest ownership

JOHN E PALMER
Forest Supervisor


Sheffield Junction
Deadman Corners
Blue Jay
Seldom Seen Corners
Iron City
Pinegrove Camp
Four Corners
Corduroy
Duhring
Pennke
MARIENVILLE
MARIENVILLE RANGER STATION
Marienville
Lamonaville
STATE GAME LANDS NO 28
(FOREST CO CO)
BUZZARD SWAMP INTERPRETIVE TRAIL
LODETA HIKING TRAIL
Halton
Millstone
Dutch Hill
CLEAR CREEK STATE

END
OF
PHYSICAL
FILE