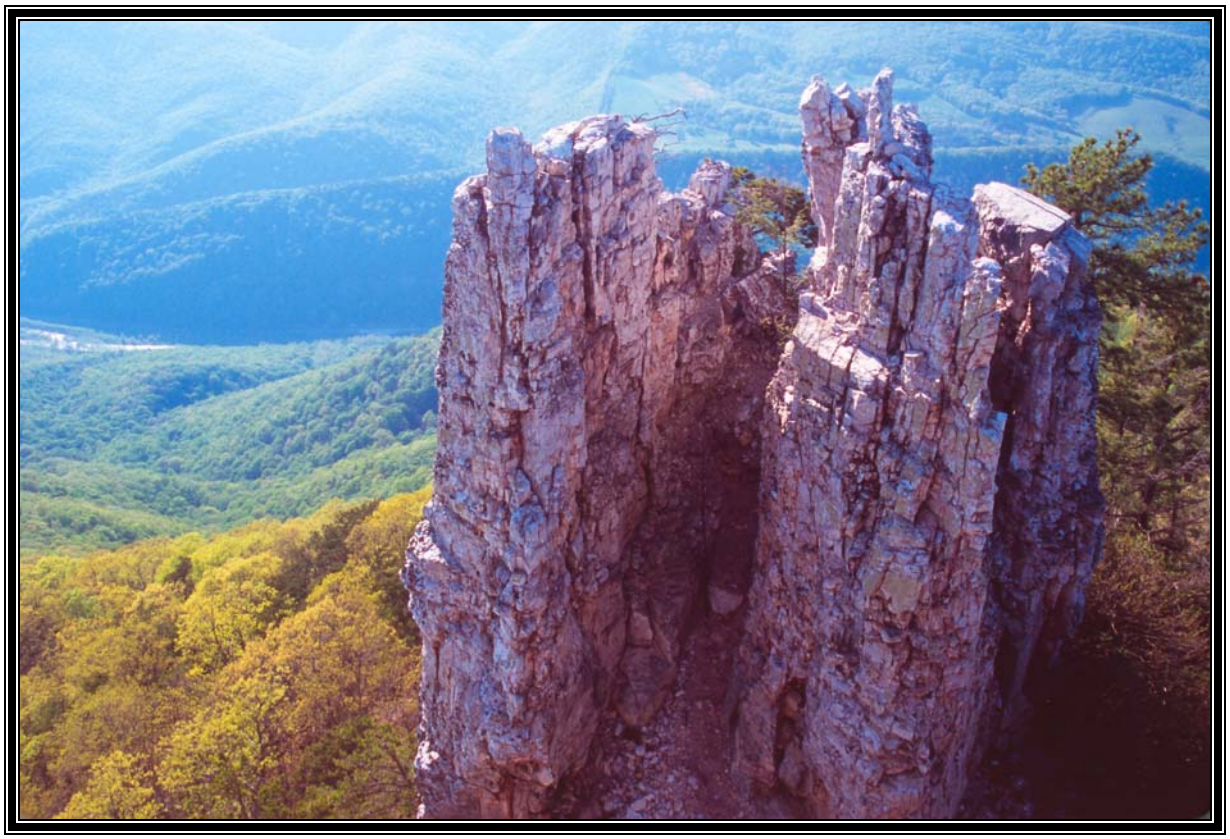
Monongahela National Forest

United States
Department of
Agriculture

Forest Service

September
2006

Land and Resource Management Plan



The U.S. Department of Agriculture (USDA) prohibits discrimination in all its program and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202)720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202)720-5964 (voice and TDD). USDA is an equal Opportunity provider and employer.

Monongahela National Forest
Land and Resource Management Plan

Table of Contents

Page No.

Chapter I – The Forest Plan
Purpose of the Forest Plan I-1
Relationship of the Forest Plan to other Documents I-2
Organization and Structure of the Forest Plan I-4
Location and Description of the Forest I-5
Management Direction and Prescriptions I-9
Implementing the Forest Plan I-10

Chapter II - Forest-wide Management Direction
Introduction II-1
Legal and Administrative Framework II-1
Consultation, Cooperation, and Coordination II-2
Definitions II-4
Timeframes II-5
Management Direction Integration II-5
Forest Integrated Desired Conditions II-6
Air Quality II-8
Soil and Water Resources II-9
Fire Management II-15
Vegetation II-17
Threatened, Endangered, and Proposed Species II-22
Wildlife and Fish II-29
Recreation II-32
Scenery Management II-35
Wild and Scenic Rivers II-37
Heritage Resources II-38
Timber Resources II-40
Range Resources II-43
Mineral and Geology Resources II-45
Lands and Special Uses II-49
Roads and Facilities II-54

Chapter III- Management Prescriptions
Introduction III-1
Management Prescription 3.0 - Vegetation Diversity III-4
Management Prescription 4.1 - Spruce and Spruce-Hardwood Restoration III-9
Management Prescription 5.0 – Designated Wilderness III-17
Management Prescription 5.1 - Recommended Wilderness III-25
Management Prescription 6.1 - Wildlife Habitat Emphasis III-31

Management Prescription 6.2 – Backcountry Recreation III-40
Management Prescription 8.0 – Special Areas III-46
Management Prescription 8.1 – Spruce Knob-Seneca Rocks NRA III-52
Management Prescription 8.2 – National Natural Landmarks III-58
Management Prescription 8.3 – Scenic Areas III-59
Management Prescription 8.4 – Ecological Areas III-61
Management Prescription 8.5 – Candidate Research Natural Areas III-63
Management Prescription 8.5 – Fernow Experimental Forest III-64
Management Prescription 8.6 – Grouse Management Areas III-66

Chapter IV – Monitoring and Evaluation
Monitoring and Evaluation Overview IV-1
Legal and Regulatory Requirements IV-2
Monitoring Framework and Components IV-2
The Monitoring Matrix IV-5

Chapter V – Glossary V-1
Acronyms V-19

Appendix A – Vegetation Management Practices
Introduction A-1
Silvicultural Systems A-1
Basis for the Allocation of Silvicultural Systems A-3
Management Prescriptions A-5
Harvest Systems for the Forest Timber Types A-7
Silvicultural Treatments A-16

Appendix B – Old Growth
Introduction B-1
Old Growth Definitions and Criteria B-2
Existing and Potential Old Growth on the MNF B-4
Identification and Distribution of Old Growth Areas B-7
References B-9

Appendix C – Analysis of the Management Situation Summary
Introduction C-1
Recreation and Wilderness C-1
Vegetation Diversity and Management C-3
Timber Management and Supply C-10
Soil, Water, and Air C-21
Benchmarks C-24
References C-26

Appendix D – Management Indicator Species D-1

Appendix E – Communication Sites E-1

Chapter I

The Forest Plan

Table of Contents

Page No.

Purpose of the Forest Plan I-1

Relationship of the Forest Plan to other Documents.....I-2

Organization and Structure of the Forest Plan I-4

Location and Description of the Forest.....I-5

Management Direction and Prescriptions I-9

Implementing the Forest Plan I-10

Changes to Chapter I Between the Proposed and Final Plans

Organization and Structure of the Forest Plan – This section was updated to include the new Glossary (Chapter V) and Appendix E.

PURPOSE OF THE FOREST PLAN

The 2006 Monongahela National Forest Land and Resource Management Plan (hereafter referred to as "the Forest Plan" or "the 2006 Plan") guides natural resource management activities on lands administered by the Monongahela National Forest. It describes management direction and practices, resource protection methods and monitoring, desired resource conditions, and the availability and suitability of lands for resource management.

The purpose of the Plan is to provide management direction to ensure sustainable ecosystems and resilient watersheds that are capable of providing a sustainable flow of beneficial goods and services to the public. The Plan is the implementing guide for fulfilling the Forest Service mission "To sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations." More specifically, the Plan establishes:

- How the Forest should look and function with successful Plan implementation (Desired Conditions),
- Management actions for achieving the Desired Conditions (Goals and Objectives),
- Required constraints or allowed actions designed to help meet Desired Conditions or to protect resources (Standards),
- Preferred actions used to achieve Goals, Objectives, and Desired Conditions (Guidelines)
- Management direction that is applicable Forest-wide,
- Management prescriptions that provide specific management emphasis and direction to different areas of the Forest,
- A Monitoring and Evaluation Plan, and
- Descriptions of lands suitable or not suitable for specific resource activities.

The Forest Plan embodies the provisions of the Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA) and its implementing regulations. The management prescriptions in the Plan are designed to realize goals and objectives for achieving desired conditions; however, future projects to implement those prescriptions will be largely dependent on annual budgets from Congress.

Forest Plan Revision

The original Land and Resource Management Plan for the Monongahela National Forest was released in 1986. The NFMA requires that forest plans are updated or revised every 10-15 years (36 CFR 219.10). This 2006 Forest Plan replaces the 1986 Plan and its amendments, and defines the programmatic framework for multiple-use management of the Forest for the next 10 to 15 years. It is important to note that the 2006 Plan does not in itself implement any specific actions or projects. Rather the 2006 Plan, through its land allocation prescriptions and management direction, sets the stage for the actions needed to be taken, or not, to move toward Forest desired conditions. The 2006 Plan does this by providing:

- The management strategies that should be used to help frame when, where, and why action or inaction is needed to help move toward achievement of desired conditions during this planning period;

- The type of activities that are allowed or not allowed to best address management strategies and related Management Prescription (MP) emphasis and direction;

- The intensity, duration, and limitations on management actions needed to manage risks and threats to resources and the social and economic environment, while maintaining or moving toward achievement of desired conditions.

Forest Service Planning Rules

Under the 1982 planning rule stated in CFR 219, the Forest Supervisor is required to review conditions of the land every five years to determine if the Forest Plan needs to be revised. If monitoring and evaluation indicate that immediate changes are needed, and these needed changes cannot be handled by amendment, then it would be necessary to revise the Plan.

This Forest Plan revision is being conducted under the 1982 version of the Forest Service planning rule. However, the Forest Service has recently released a new 2005 Planning Rule. Subsequent revisions or amendments to this Plan will be developed under the new rule.

RELATIONSHIP OF THE FOREST PLAN TO OTHER DOCUMENTS

Organic Administration Act

The Organic Administration Act authorized the creation of what is now the National Forest System. The law established forest reserves "to improve and protect the forests within the boundaries, or for the purpose of securing favorable water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."

Multiple-Use Sustained Yield Act

In this Act, Congress affirmed the application of sustainability to the broad range of resources over which the Forest Service has responsibility. This Act confirms the authority to manage the national forests "for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

Forest and Rangeland Renewable Resources Planning Act

The Monongahela Forest Plan was developed and revised within the framework of national and regional Forest Service direction. The Forest and Rangeland Renewable Resources Planning Act (RPA) and its implementing Program set direction and output levels for National Forest System lands. Goods and services are distributed based upon detailed, site-specific information concerning the capability and suitability of National Forest System lands being assigned various management activities and prescriptions at the Forest level. The Plan provides information for the RPA assessment and program updates.

National Forest Management Act

This Act requires that National Forest System land be managed for a variety of uses on a sustained basis to ensure in perpetuity a continued supply of goods and services to the American people. The Act regulations also establish analytical and procedural requirements for developing, revising, and amending forest plans. The Forest Plan embodies the provisions of the NFMA and its regulations on forest planning and implementation.

National Environmental Policy Act

This Act ensures that environmental information is disclosed to public officials and citizens before federal decisions are made and actions are taken. This disclosure helps public officials make decisions based on an understanding of environmental consequences. Essential to this process are accurate scientific analyses, expert agency input, and public involvement, all of which have been part of the revision process. The 2006 Forest Plan has been analyzed, and the potential effects have been disclosed in an accompanying EIS. The Act also requires environmental analysis and disclosure for site-specific management actions that may be implemented under the Plan's direction and guidance.

Endangered Species Act

This Act requires federal agencies to accommodate the conservation of endangered and threatened species in their planning and implementation efforts. The 2006 Plan has specific management direction that addresses the conservation of ESA listed, proposed, and candidate species. Actions that are implemented under the Plan guidance, and that may affect listed species or their habitats, would also be subject to consultation with the US Fish and Wildlife Service, which may include conservation recommendations and/or terms and conditions for implementation.

Forest Plan Environmental Impact Statement (EIS)

During the Forest Plan revision effort, management alternatives were developed, analyzed, and compared, from which the Regional Forester selected an alternative for implementation. This Forest Plan represents the selected alternative in the Record of Decision that accompanies the Plan and the Final EIS. The planning process and analysis procedures used in developing the selected alternative and Plan are described or referenced in this document, the Final EIS, and the supporting project or planning record.

Subsequent Multi-scale Analyses, Project Assessment and Planning

Management activities on National Forest System lands within the administrative boundary of the Monongahela National Forest will be planned and implemented in a manner that furthers the achievement of the goals and objectives described in this Forest Plan. Forest Plan direction serves as an umbrella for environmental analysis and project planning and implementation.

Subsequent mid-, fine-scale analyses and project planning and implementation will be tiered to this Plan and its companion EIS, as provided for in 40 CFR 1502.20.

Plans for Special Areas

The 4600-acre Fernow Experimental Forest is located south of Parsons, West Virginia, and is administered by the staff of RWU-NE-4353, Sustaining the Diversity and Productivity of Appalachian Forests, of the Northeastern Research Station. The Fernow was formally mandated in 1934 to be made "permanently available for forest research and the demonstration of its results". As such, the Fernow operates under its own mandate and management plan.

Designated by Congress in 1965, the Spruce Knob-Seneca Rocks National Recreation Area has a separate management plan, which the Forest is planning to revise in the near future. The revision will be tiered to Management Prescription 8.1 in this Forest Plan.

Existing Forest Plan, Permits, Contracts, and Other Uses

The 2006 Forest Plan replaces the 1986 Forest Plan. All permits, contracts, and instruments for use or occupancy of the Forest must conform to the 2006 Plan's direction. However, because some existing permits and leases are already committed, they will remain in effect until they can be adjusted to accommodate direction in the 2006 Forest Plan. The Record of Decision for the 2006 Forest Plan provides the Responsible Official's direction concerning transition of the permits, contracts, and other uses to reflect direction of this Forest Plan.

ORGANIZATION AND STRUCTURE OF THE FOREST PLAN

The Forest Plan, as administered by the Forest Supervisor, provides direction for managing the Monongahela National Forest. The Plan contains the goals, objectives, standards, and guidelines needed to achieve the desired conditions for Forest resources and programs. The Forest Plan is organized into the chapters and appendices described below. Subsections for the chapters and appendices are listed in the Table of Contents.

Chapter I – Introduction
Discusses the general purpose of the Forest Plan, the relationship of the Plan to other documents, and Plan organization and implementation. Includes an integrated description of the Forest.

Chapter II – Forest-wide Management Direction
Presents management direction for the Forest as a whole, including Forest-wide desired conditions, goals, objectives, standards, and guidelines.

Chapter III – Management Prescriptions
Describes the resources of each Management Prescription, and provides area-specific direction for the management of those resources. Denotes suitability of lands for specific activities/uses.

Chapter IV – Monitoring and Evaluation Plan
Presents a plan for monitoring and evaluating the effects of management practices, and describes how the Plan will be amended or revised in the future.

Chapter V - Glossary
Includes definitions of key terms, and commonly used acronyms.

Appendix A – Vegetation Management Practices
Describes forest types and harvest methods and silvicultural treatments that can be used to manage them.

Appendix B – Old Growth
Describes existing old growth, defines old-growth characteristics, and identifies the distribution of potential old growth areas on the Forest.

Appendix C – Analysis of the Management Situation Summary
Describes the Need For Change in management direction for selected resources, the current condition of those resources, and how the Plan addresses the Need For Change.

Appendix D – Management Indicator Species
Describes the revised list of MIS on the Forest and the disposition of MIS from the 1986 Plan.

Appendix E – Communication Sites
Describes the communication and electronic sites on the Forest and designates their users.

LOCATION AND DESCRIPTION OF THE FOREST

The Monongahela National Forest is located in east central West Virginia (see Figure I-1), in portions of Barbour, Grant, Greenbrier, Nicholas, Pendleton, Pocahontas, Preston, Randolph, Tucker, and Webster Counties. The Forest has over 919,000 acres within the Allegheny Mountains of the Appalachian System. The Supervisor's Office is located in Elkins, West Virginia, and the Forest is divided into four Ranger Districts: Cheat-Potomac, Greenbrier, Gauley, and Marlinton-White Sulphur Springs. District offices are in Parsons, Petersburg, Bartow, Richwood, Marlinton, and White Sulphur Springs, West Virginia. The Forest is an administrative unit of the Eastern Region (Region 9) of the Forest Service, U.S. Department of Agriculture. The Regional Forester's office is in Milwaukee, Wisconsin.

The Forest is regarded as a special place by many who visit or live nearby. American Indians lived here for thousands of years, at first hunting and gathering and then later in agricultural-based villages. Three hundred years ago, the Allegheny Mountains represented the American frontier to European settlers eager for a fresh start in a new land. These mountains and their resources provided the lumber and coal to house and fuel a growing nation teeming with immigration and opportunity. However, logging methods used during the late 1800s and early 1900s left the mountains with bare slopes and flammable slash. Wildfires burned across these lands and sometimes into uncut forests. In the early 1900s, the barren hillsides could no longer

stop rainwater from flowing unchecked into creeks and streams, and flooding communities as far away as Pennsylvania. In 1915, the Federal Government began to purchase these cutover lands with the intent of reforesting them to prevent floods. When the Monongahela National Forest was created by Congress in 1920, much of the land was devoid of forest. Since then, time and resource management, such as tree planting and fire protection, have helped the land to recover.

Now the Monongahela encompasses more than 919,000 acres of federal ownership in 10 counties of the Potomac Highlands region of West Virginia. It is the largest expanse of public land in the State, and fourth largest National Forest in the 20 northeastern states. It is located in proximity to major population centers of the region, including Washington, D.C., Baltimore, Philadelphia, and Pittsburgh. Despite being heavily affected by humans over the last two hundred years, the Forest retains a sense of seclusion and solitude. Rugged topography, expansive forest, fast-moving mountain streams, and small communities interspersed with pastoral farmland combine to create a sense of stepping back in time.

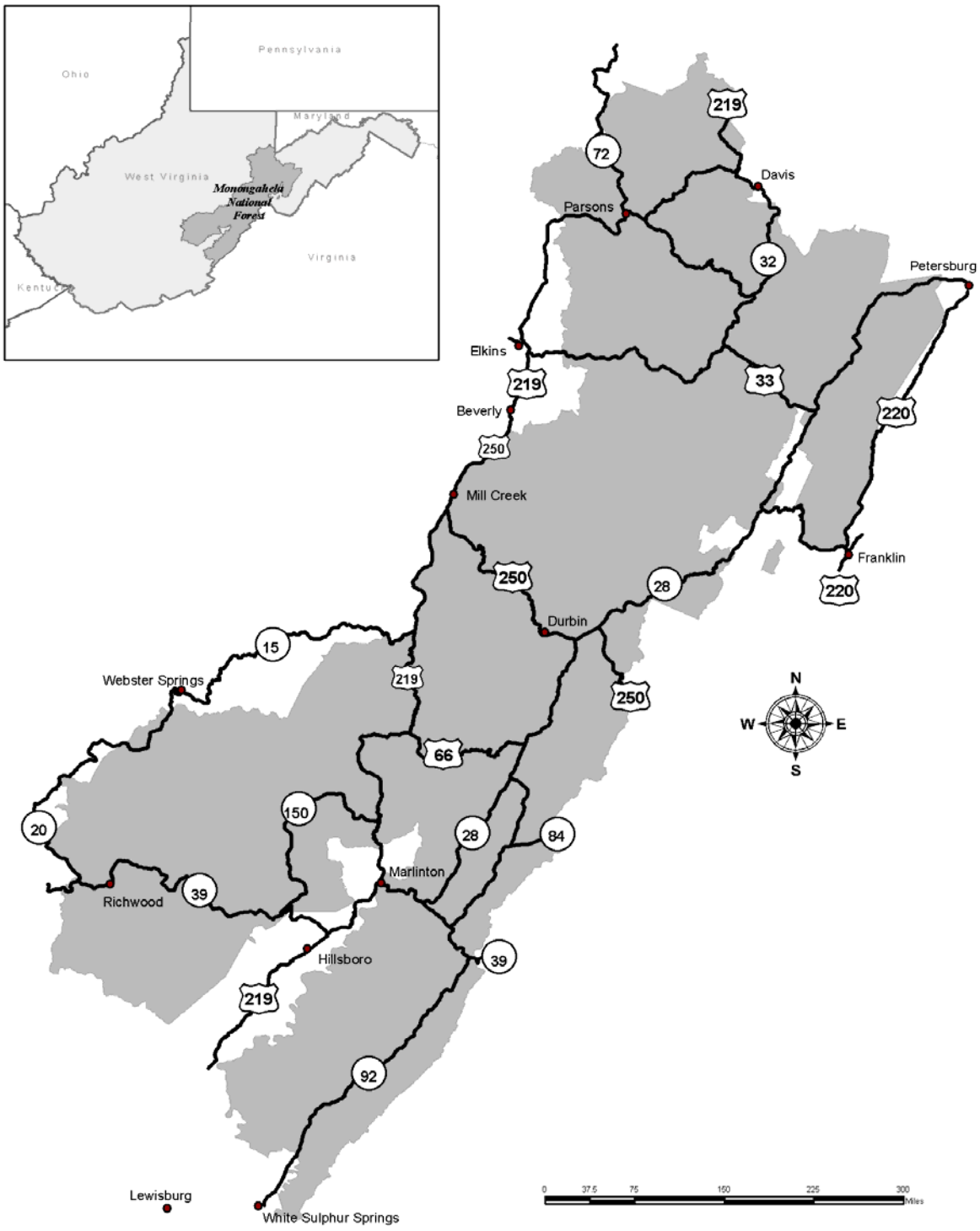
Due in large part to its geographic location in the Mid-Atlantic Region and its mountainous terrain, the Monongahela National Forest is one of the most ecologically diverse forests in the National Forest System. As prevailing weather patterns approach from the west, clouds are lifted up across the Forest and over the Allegheny Front of the Appalachian Mountains. As a result, the west side of the Forest receives around 60 inches of precipitation annually, while the east side, in the rain shadow of the mountains, may get less than half that amount. This difference contributes to the broad range of plant and animal communities within the Forest. Containing only about 6 percent of the land in West Virginia, the Monongahela is home to 13 percent of the rare plant and animal species in the State.

Because of its great diversity, the Forest is an important area for scientific research. The Fernow Experimental Forest, located on NFS lands south of Parsons, conducts long-term ecological and silvicultural research. In addition, the Forest has four candidate Research Natural Areas, 17 Botanical Areas, a Geological Area , and 5 Genetic Areas that have been set aside primarily for scientific interest and study.

The Forest contains the northern-most populations of certain southern species, and the southern-most populations of some northern species. The highest elevations in the Mountain State are on the Monongahela, including Spruce Knob, the apex at 4,863 feet. Cold soil temperatures, stands of red spruce, and populations of snowshoe hare—all more typical of northern boreal forests—occur across the Forest at higher elevations. Lower elevations contain coves with rich deep soils typical of the southern Appalachians; stands of mixed northern hardwoods typical of the northern Appalachians; and dry-site stands of oak and white pine. Prickly pear cactus grows on the eastern slopes of the Forest, along with rare species like shale barren rock cress.

Many of the 70+ species of trees found on the Monongahela are valuable for commercial wood products as well as wildlife habitat. Especially valuable are black cherry, sugar maple, and red oak. Most of the Forest is contiguously forested, containing 70-100 year-old stands that provide habitat for interior-dwelling species.

Figure I-1. Location Map – Monongahela National Forest



The geology of the Forest provides the setting for 40-50 natural gas wells, which are a regionally important and a valuable natural gas resource. It is expected that future leasing and development will continue to discover and produce natural gas for public use. In addition, there is a natural gas storage field located beneath the Forest that serves an important role in making natural gas available to eastern U.S. population centers in times of high demand.

Headwaters of six major river systems are within the Forest boundary, and water is an important resource for both on-Forest and off-Forest users. The steep slopes of the Monongahela give rise to nearly 600 miles of coldwater streams that become the Tygarts Valley, Potomac, Cheat, Greenbrier, Elk, and Gauley Rivers. More than 90 percent of the high-quality trout waters in West Virginia are said to be within the Forest boundary.

The Forest receives some of the highest acid deposition rates in the country because of its location downwind from coal-fired power plants the Ohio River Valley. This deposition has raised management concerns relating to loss of aquatic species from stream acidification, and to changes in soil chemistry, which could impact the productivity of Forest soils.

The Monongahela contains an estimated 52 percent of the publicly available recreation land in West Virginia and draws users from local areas, across the State, and surrounding States. Recreation opportunities range from hiking on over 800 miles of trails, angling in high-quality trout streams or on small warm-water impoundments, hunting, nature watching, camping in both primitive and developed settings, visiting historical and cultural sites, rock climbing, caving, and driving for pleasure. Mountain biking occurs on Forest roads, many trails, and on former railroad grades. Auto touring attractions include the 22 mile-long Highland Scenic Highway, and spectacular fall leaf color. The national importance of the recreation resource has been recognized with Spruce Knob-Seneca Rocks National Recreation Area, five Wildernesses, three Scenic Areas, a National Scenic Highway, a National Recreation Trail, and two visitor centers.

Economic contributions to the local and national economy from the Monongahela include receipts, fees, and employment opportunities from timber harvest, mineral development, livestock grazing, recreation, and special uses, and the availability of products such as firewood and medicinal plants. One of the other important economic contributions to the local economy is to serve as the backdrop for local businesses, tourism, and guiding services, and as an added attraction for those coming to ski or golf in the area.

Our management philosophy is based on the belief that public land in the Appalachians is scarce and precious. As surrounding population centers expand, the Monongahela National Forest will become increasingly rare and valuable as a place of ecological, historic, cultural, and economic importance in the region. We believe we should manage the Forest for its special features, and in ways desired by today's public and future generations.

Changes, including increased development, are expected to continue on private lands around the Forest, and these changes will likely create more demand for, and impacts on, Forest resources. To meet this challenge, the Forest will protect or restore soil and water resources, use vegetation management to sustain healthy forests and diverse wildlife habitat, contribute to the recovery of

listed and rare species, maintain scenic quality and variety, and provide a range of recreation settings and opportunities, including the uncommon areas of extensive backcountry.

MANAGEMENT DIRECTION AND PRESCRIPTIONS

The 1986 Monongahela National Forest Plan emphasized the production of goods and services tied to the accomplishment of multiple-use objectives, including the production of wood fiber, maintaining or enhancing visual quality, providing recreation opportunities, and protecting and improving fish and wildlife habitat. The 2006 Plan strives to achieve desired outcomes for restoration or maintenance of vegetation and watershed conditions, including terrestrial, riparian, and aquatic habitats. Goods and services tied to accomplishment of multiple-use objectives will be the product of management actions designed to meet these desired outcomes.

Land management on the Forest is driven by the goals and objectives listed in Chapter II of the Plan. The Responsible Official, in consultation with the Revision Team, reviewed the goals and objectives in the 1986 Plan and found many to be still appropriate, and many that needed to be changed or strengthened. Similarly, some Plan standards and guidelines were also modified or deleted during revision.

Table I-1 summarizes the changes in management prescription allocations made in the Plan. The Monongahela National Forest 1986 Forest Plan allocations, as amended (i.e., Alternative 1 in the supporting EIS), are compared to similar allocations used in the 2006 Plan. Chapter III of the 2006 Forest Plan describes these allocations and their purpose in greater detail.

Table I-1. Comparison of 1986 Forest Plan Management Prescriptions and 2006 Forest Plan Management Prescriptions, In Acres and Percent of Forest

1986 Plan as Amended Management Prescriptions	Acres	%*	2006 Plan Management Prescriptions	Acres	%
1.1 – Mineral Development	0	0	1.1 – No longer exists	0	0
2.0 – Uneven-aged Management	13,700	1.5	2.0 – No longer exists	0	0
3.0 – Even-aged Management	137,000	15.0	3.0 – Age Class Diversity	196,900	21.5
4.0 – Conifer Management	400	0	4.0 – No longer exists	0	0
4.1 – Did not exist in 1986	0	0	4.1 – Spruce Restoration	155,700	17.0
5.0 – Designated Wilderness	78,700	8.6	5.0 – Designated Wilderness	78,700	8.6
5.1 – Recommended Wilderness	0	0	5.1 – Recommended Wilderness	27,300	3.0
6.1 – Wildlife Habitat Emphasis	284,400	31.0	6.1 – Wildlife Habitat Emphasis	286,600	31.3
6.2 – Backcountry Recreation	124,500	13.6	6.2 – Backcountry Recreation	97,500	10.6
6.3 – Indiana Bat Habitat	136,100	14.9	6.3 – No longer exists	0	0
7.0 – Developed Recreation	1,100	0.1	7.0 – No longer exists	0	0
8.0 – Special Areas	130,500	14.2	8.0 – Special Areas	73,600	8.0

*Percentages for the 1986 Plan do not total 100 because of some lands that have no prescription.

IMPLEMENTING THE FOREST PLAN

The National Forest Management Act requires that "permits, contracts and other instruments for use and occupancy" of National Forest System lands be "consistent" with the Forest Plan [16 U.S.C. 1640(i)]. In the context of a 2006 Plan, the National Forest Management Act specifically conditions this requirement in three ways:

1. These documents must be revised only "when necessary;"
2. These documents must be revised as "soon as practicable;"
3. Any revisions are "subject to valid existing rights."

Tools and Techniques

The Forest will reach its desired conditions for vegetation through natural ecological processes and by using a diverse range of management tools and techniques.

To the extent practical, timber management will be used to emulate naturally occurring disturbances (fire and windstorms, for instance). These management practices will include both even-aged and uneven-aged techniques. Clearcutting with reserve trees will continue to be used on the Forest when it is the optimal method to meet the objectives and requirements of the Forest Plan. The Forest will also use shelterwood, group selection, individual tree selection harvesting, and other harvest treatments to create or maintain multi-aged and uneven-aged stands.

Prescribed fire will be used alone or with silvicultural treatments to mimic the effects of natural fire. Management-ignited fire will help maintain, enhance, and restore natural ecological processes on the Forest. Wildland fires will continue to be suppressed to protect Forest resources and investments, as well as nearby private property. Minimum impact tactics can be used in sensitive areas to reduce the potential for adverse effects from fire suppression activities.

The Forest will promote re-growth of harvested or other disturbed forests with a variety of regeneration practices. These practices include regenerating forests through tree planting, seeding, and natural regeneration. Many areas will naturally change through forest succession.

The Forest will also reach its desired conditions for human uses by utilizing a diverse range of management tools and techniques. Environmentally sustainable management practices will provide commodity and non-commodity resources to contribute to the social and economic stability of local communities. Practices to achieve this include prescribed fire, timber harvest, and traditional gathering activities.

The Forest will provide recreation opportunities in a multiple-use setting by using management tools such as the Scenery Management System and the Recreation Opportunity Spectrum.

Ecological functions of watersheds and riparian areas will be enhanced or restored through techniques such as reconstructing or improving road and trail crossings, decommissioning unneeded roads, or through using silvicultural treatments or fire to enhance shade, coarse woody debris recruitment, or bank stability in riparian areas.

The Forest may create new roads and trails if needed for site-level projects or to respond to increased demand. The majority of project roads will be Maintenance Level 1 or 2, and they will often be closed to public motorized use after the project.

Site-level Projects

"Implementing the Forest Plan" means developing and implementing site-level management projects in order to reach or move toward the desired conditions established in the Forest Plan.

Project-level compliance with the National Forest Management Act is primarily concerned with consistency with the Plan and the Act's regulations.

Compliance with the National Environmental Policy Act involves the appropriate environmental analysis process for a specific proposal, proper documentation, and public disclosure of effects in an environmental assessment, environmental impact statement, or categorical exclusion. When appropriate or applicable, the Forest will perform environmental analysis on site-level projects and activities. An analysis file or project file will be available for public review, but it may not always necessary to document the analysis in the form of an environmental assessment or environmental impact statement.

Environmental analysis of site-level projects will use as its basis the data and evaluations in the Forest Plan and the EIS for the Forest Plan. Environmental analysis of site-level projects will be linked to the Final EIS accompanying the 2006 Forest Plan.

The following are some examples of project-level decisions that would likely require additional environmental analyses and disclosure as the 2006 Forest Plan is carried out:

- Commercial timber harvest,
- Wildlife improvement projects,
- Prescribed burn projects,
- Watershed improvement or restoration projects, or
- Trail or road construction.

Operational Activities Exempt from the National Environmental Policy Act Procedures

Resource inventories, action plans, and schedules do not require additional environmental analysis and disclosure at the project level. The following are some examples of operational activities that do not constitute site-specific decisions and therefore are exempt from National Environmental Policy Act procedures:

- Developing five-year wildlife or timber action plans,
- Completing fire-situation reports,
- Scheduling maintenance for developed recreation sites or administrative sites,
- Collecting data through inventory or monitoring,
- Preparing land ownership adjustment plans.

Budgets

Annual Forest budget proposals are based on the actions required to achieve the goals, desired conditions and objectives of the Forest Plan. These actions must be funded by Forest budgets that are approved on an annual basis by Congress. The National Forest System appropriation from Congress provides funds for stewardship and management of each national forest across the country. These appropriated funds are critical for translating the goals, desired conditions and objectives stated in the Forest Plan to on-the-ground results.

Upon receipt of the final budget, the Forest annually prepares an implementation budget. This budget is a result of program development, annual work planning, and monitoring processes. These processes supplement the Forest Plan and make the annual adjustments and changes needed to reflect current priorities within the overall management direction contained in the Plan. Therefore, the funding distribution between program components and the intensity or level of activities in those programs is a reflection of the Plan, as well as the will of Congress. The final determining factor in carrying out the intent of the Forest Plan is the level of funding, which dictates the rate and priorities of Plan implementation.

Forest Plan Amendments

Most proposed activities will be consistent with direction in the Forest Plan. When management actions are found to be inconsistent with Plan direction, or site-specific analysis shows an error in the Plan, the Plan or the proposal will be adjusted according to the analysis. Adjusting the Plan may require an amendment. The Forest Supervisor would determine whether proposed amendments to the Forest Plan are significant or non-significant.

The need to amend management direction may result from:

- Changes in physical, biological, social, or economic conditions.
- Recommendations of an interdisciplinary team based on the results of monitoring and evaluation.
- Determination by the Forest Supervisor that existing or proposed projects, permits, contracts, cooperative agreements, or other instruments authorizing occupancy and use are appropriate, but not consistent with elements of the Forest Plan management direction.
- Errors in planning found during implementation. Conflicts may be identified between different sections of management direction. For instance there could be discrepancies in the selected alternative map and the narrative description of the selected alternative. The Forest Plan does not prioritize management direction; therefore a discrepancy would need to be resolved by determining the management intent using a variety of information, such as the planning record, EIS, and the 2006 Forest Plan. Minor technical errors may be corrected via errata and may not require a Plan amendment.
- Legislative or Directive changes.

Chapter II

Forest-wide Management Direction

Table of Contents

Page No.

Introduction II-1
Legal and Administrative Framework II-1
Consultation, Cooperation, and Coordination II-2
Definitions II-4
Timeframes II-5
Management Direction and Integration II-5
Forest Integrated Desired Conditions II-6
Air Quality II-8
Soil and Water Resources II-9
Fire Management II-15
Vegetation II-17
Threatened, Endangered, and Proposed Species II-22
Wildlife and Fish II-29
Recreation Resources II-32
Scenery Management II-35
Wild and Scenic Rivers II-37
Heritage Resources II-38
Timber Resources II-40
Range Resources II-43
Mineral and Geology Resources II-45
Lands and Special Uses II-49
Roads and Facilities II-54

Changes to Chapter II Between the Proposed and Final Plans

Introduction – In response to comments on the Proposed Plan, we added a statement to clarify that the Forest may apply additional mitigation during project implementation to further reduce potential effects from proposed activities.

Legal and Administrative Framework – We replaced two laws related to Minerals with more appropriate ones. The Outstanding and Reserved Rights language was adjusted.

Consultation, Cooperation, and Coordination – We added a paragraph for Soils.

Forest-wide Management Direction – In response to comments on the Proposed Plan, we made a number of editorial changes, clarifications, and additions to this section. Key additions are summarized below:

- Standard FM13 addresses prescribed natural fire at the Forest-wide scale.
- Objective VE03 provides direction for managing vegetation on unsuited lands.
- Guidelines VE17 and VE18 address collection and classification of vegetation data.
- Goal TE12 addresses habitat needs for Virginia big-eared bat.
- Standard TE47 provides consistent special use direction for Indiana bat habitat.
- TE68 through TE83 provide direction for running buffalo clover management.
- Objectives WF07 and WF08 address aquatic and riparian habitat restoration.
- Goal RC06 addresses mutual cooperation with local entities to promote recreation.
- Guideline TR10 has been expanded to provide for wildlife opening rehabilitation.
- Objective RF03 addresses road decommissioning.
- Guideline RF14 and Standard RF 15 address management of temporary roads.

We added pictures throughout the Chapter to fill in blank space and give the reader a “sense of place” associated with the Forest.

INTRODUCTION

This chapter describes Forest-wide management direction for the Forest that will guide Forest personnel to achieve desired outcomes and conditions for both land stewardship and public service. The management direction in this chapter applies to National Forest System (NFS) lands within the proclaimed boundary and purchase units of the Monongahela National Forest. The Forest-wide Management Direction section provides general direction for all Forest resources and the foundation for more specific direction at the Management Prescription (MP) level in Chapter III.

It is important to note that the Forest Plan direction found in this chapter does not implement any management activities, but rather provides the context for future implementation. When and if project implementation occurs, the Forest will disclose and analyze the proposed activities and their potential effects, using the National Environmental Policy Act process. This process will include public involvement and provide the Forest decision-maker with a range of alternatives and effects from which to choose management options. During project implementation, the Forest may apply additional mitigation measures not described in this Forest Plan to further reduce potential effects from proposed activities where appropriate.

LEGAL AND ADMINISTRATIVE FRAMEWORK

Law, Regulation, and Policy - As a federal land management agency, the Forest Service must follow all applicable federal, state, and local laws and regulations. If these laws change or are amended, or if new laws are enacted, the Forest administration will comply with the changes or additions. The same situation applies to executive orders and to agency policy, as expressed in Forest Service Manual (FSM) and Handbook (FSH) directives. This direction is mandatory and does not need to be restated in the Forest Plan. Wherever the laws, regulations, or policies have more stringent requirements than Forest Plan direction, the Forest must and will comply with those requirements. Some of the more well-known federal laws the Forest must follow include:

National Environmental Policy Act (1969)
Clean Water Act (1948) and Amendments
Multiple Use Sustained Yield Act (1960)
National Forest Roads and Trails Act (1964)
Archeological Resources Protection Act (1979)
National Forest Management Act (1976)
Clean Air Act (1955) and Amendments
Wilderness Act (1964)
National Historic Preservation Act (1966)
Endangered Species Act (1973)
Forest and Rangeland Renewable Resources Act (1974)
Federal Onshore Oil and Gas Leasing Reform Act (1987)
Surface Mining Control and Reclamation Act (1977)

Outstanding and Reserved Rights – Laws and regulations, including those noted above, incorporate a number of outstanding or reserved rights, such as the entitlement to access and develop a deeded mineral right. These rights will be honored by the Forest, even though they are not explicitly listed as exceptions to the development restrictions that appear in some of the Forest-wide and Management Prescription standards and guidelines. The Forest cannot usurp these rights unless claimants or property owners are willing to negotiate for just compensation.

Forest Service Directives - Existing administrative policy, procedure, and guidance to Forest Service employees issued through the Forest Service Directive System are not typically duplicated in this plan. Directive sources (FSM and FSH) are cited at the beginning of each resource section to provide Forest managers with references for further guidance to the resource areas. These directive references are not to be construed as additional Forest Plan direction, but rather they are links to important direction in addition to the Plan.

In addition to the laws, regulation, and policies described above, the Forest also complies with direction from a number of other official sources, such as approved Conservation Strategies or Agreements, terms and conditions from Biological Opinions, State Best Management Practices, State Total Maximum Daily Load requirements, Memoranda Of Understanding, Memoranda Of Agreement, and various interagency protocols. This direction may be cited, but does not need to be repeated in the Forest Plan.

State Best Management Practices (BMPs) - State BMPs have been designed to provide protection to soil, water, and other natural resources throughout West Virginia. These BMPs are updated periodically to address changes in conditions, concerns, or scientific findings. Although the Forest is not legally required to follow State BMPs, it is our intent to have management direction in place that meets or exceeds the natural resource protection provided by State practices. This Forest Plan reflects that intent, and the Plan can be adjusted so that it continues to meet or exceed BMP protection in the future.

CONSULTATION, COOPERATION, AND COORDINATION

The Forest consults, cooperates, and coordinates with many agencies and organizations for a variety of reasons. Some of these activities are mandatory requirements, and some are the result of agreements to help improve management efficiency or reduce potential conflicts. If these requirements or agreements change, the Forest will comply with, or adapt to, the changes as needed. The Forest considers these consultation, cooperation, and coordination activities as standard operating procedure, and therefore they are generally not restated as direction in the Forest Plan. Some of these activities include:

TEP Species - Although all Threatened, Endangered, or Proposed (TEP) species on the Forest may not be individually addressed in the Forest Plan management direction, the Forest is obligated to provide sufficient habitat to contribute to their survival and recovery. This obligation is spelled out in more detail in the Endangered Species Act, FSM and FSH direction, and various recovery plans, conservation strategies and agreements, and MOUs. In addition, the Forest consults with the U.S. Fish and Wildlife Service at the project level for proposed actions that may affect these species or their habitats.

Wildlife and Fish – The Forest coordinates with West Virginia Division of Natural Resources (WVDNR) on a variety of activities or uses that may affect species or their habitats to maintain sustainable wildlife and fish populations on the Forest.

Cultural Resources – The Forest consults with the State Historic Preservation Office and the Advisory Council on Historic Preservation as needed on actions that may affect cultural resources. The Forest also consults with appropriate parties when American Indian human remains or associated funerary objects are discovered.

Air Quality – The Forest coordinates with air quality regulatory authorities on impacts of air pollution on National Forest resources, and practices to control emissions resulting from Forest management activities.

Soils - The Forest cooperates with the Forest Service Research and State and Private Forestry, the Natural Resources Conservation Service - Soil Survey Division, the West Virginia University Extension Service through the National Cooperative Soil Survey, and many other universities to pool soil resource management expertise and to promote sound soil interpretations used for determining effects on soils.

Law Enforcement – The Forest cooperates with the Federal Magistrate System and local, state, and federal law enforcement agencies to facilitate enforcement of laws and regulations.

Minerals - The Forest cooperates with the Office of Surface Mining, Bureau of Land Management, U.S. Geological Survey, U.S. Mine Safety and Health Administration, West Virginia Department of Environmental Protection, and U.S. Environmental Protection Agency in administering mining, oil and gas and mineral leasing laws and in solving problems resulting from past and present minerals operations.

Range - The Forest Service cooperates with Forest Service Research and State and Private Forestry offices, the Natural Resources Conservation Service, the West Virginia University (WVU) Extension Service, WVDNR, and the West Virginia Department of Agriculture to pool management expertise and promote sound range management practices

Timber - The Forest cooperates with Forest Service Research and State and Private Forestry offices, WVU Extension Service, West Virginia Forestry Association, West Virginia Department of Agriculture, West Virginia Division of Forestry, and the other professional foresters to pool management expertise and promote sound timber management practices.

Rare Plants/Communities - The Forest coordinates with the West Virginia Natural Heritage Program, The Nature Conservancy, and other non-governmental organizations on rare plants and communities.

Non-Native Invasive Species - The Forest cooperates with federal agencies, WVDNR and West Virginia DOH, county extension agents, and private individuals in establishing strategic priorities, and locating and treating non-native invasive species.

Integrated Pest Management - The Forest coordinates insect and disease monitoring and suppression activities with Forest Service Research, State and Private Forestry offices, West Virginia Department of Agriculture Pesticide Division, WVDNR, WVU, and affected landowners.

Fire - The Forest cooperates with West Virginia Division of Forestry and local fire departments to protect NFS lands and adjacent land ownerships from wildfire.

The National Radio Astronomy Observatory (NRAO) - The Forest coordinates with the NRAO on any application for special use permit located within the NRAO Quiet Zone, and on activities within one mile of the NRAO sites that might produce incidental radio emission.

Search and Rescue – The Forest cooperates with state and local authorities, who bear the primary responsibility for search and rescue. In those cases where state and local officials have not had time to organize and act, the Forest Service may initiate search and rescue operations to reduce suffering and to save lives.

Highland Scenic Highway - The Forest cooperates with the Federal Highway Administration, West Virginia Department of Highways, and other agencies in the improvement, operation, and management of the Highland Scenic Highway, including law enforcement and traffic regulation.

Research – The Forest consults and coordinates with the USDA Northeastern Research Station, universities, and other state and federal agencies to conduct research into Forest management activities and impacts, develop and improve management techniques, and apply the best scientific information and technology to management practices.

DEFINITIONS

There five types of direction used for the Forest resource programs—desired conditions, goals, objectives, standards, and guidelines—are described in detail, below.

Desired Conditions are descriptions of how Forest resources should look and function to provide diverse and sustainable habitats, settings, goods, and services. Taken together, the desired conditions should present an integrated vision of a properly functioning Forest that supports a broad range of biological diversity and social and economic opportunity.

Goals are statements that help describe desired conditions, or how to achieve those conditions. Goals are designed to maintain conditions if they are currently within their desired range, or move conditions toward their desired range if they are currently outside that range. Goals are normally expressed in general terms that are timeless, and there are no specific dates by which they must be achieved. Goal statements form the basis from which objectives are developed.

Objectives are concise time-specific statements of actions or results designed to help achieve goals. Objectives form the basis for project-level actions or proposals to help achieve Forest goals. Like goals, objectives are designed to maintain conditions if they are currently within their desired range, or move conditions toward their desired range if they are currently outside that range. The timeframe for accomplishing objectives, unless otherwise stated, is generally considered to be the planning period, or the next 10 to 15 years. More specific dates are not typically used because accomplishment can be delayed by funding, litigation, environmental changes, and other influences beyond the Forest's control.

Standards are binding limitations placed on management actions. Standards are typically action restrictions designed to prevent degradation of resource conditions, or exceeding a threshold of unacceptable effects, so that conditions can be maintained or restored over time. However, exceptions are made in some cases to allow temporary or short-term effects in order to achieve long-term goals. Standards must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive its application.

Guidelines represent a preferred or advisable course of action generally expected to be carried out. They can also describe limitations on management actions, but they are generally not as restrictive as standards. Guidelines often indicate measures that should be taken to help maintain or restore resource conditions, or prevent resource degradation. Deviation from compliance does not require a Forest Plan amendment (as with a standard), but rationale for deviation is required in the project record or NEPA documentation for a signed decision.

TIMEFRAMES

As noted above, management objectives in this Plan are generally designed to be achieved within the planning period (the next 10 to 15 years), unless otherwise stated. Similarly, standards and guidelines are expected to apply for the planning period, although there may be deviations, as explained in the definitions above. In addition, the Continuous Assessment and Planning process, under which this Plan was developed, will allow the Plan to adapt through time. If, for instance, monitoring shows that a certain standard is not working, or that a new guideline is needed, changes can be made during the planning period with Forest Plan amendments.

Desired conditions and goals are more timeless in nature. For certain resources, the desired conditions may already exist, in which case both the short-term and long-term goal may be to maintain those conditions over time. In other cases, there may be short-term impediments to achieving desired conditions, but the long-term goal is to move resources toward those conditions. One example would be a desired condition of having a greater amount of large trees and snags in specific vegetation types. The Forest can retain existing large trees over the short-term planning period, but to achieve the desired condition of more trees may take much longer due to the extended time needed for trees to grow to a large size.

MANAGEMENT DIRECTION AND INTEGRATION

Although the Forest-wide management direction is presented by individual resource area for efficient reference and retrieval, this direction has been integrated across resource areas. Direction in one resource area is linked to related direction in other resource areas where appropriate. General and integrated desired conditions for the Forest are presented below, followed by management direction for individual resource or program areas.

Forest Integrated Desired Conditions

The desired condition for the Forest is to care for the land and serve people through the maintenance and restoration of productive and sustainable ecosystems. The Forest continues to cooperate, coordinate, and consult with a variety of agencies, organizations, and government entities to achieve mutual benefits from Forest resource management. The Forest features a broad array of landscapes and opportunities, from wilderness areas where natural conditions predominate, to concentrated development areas where conditions have been highly altered to meet specific resource needs or concerns. Specific uses, practices, or activities on the Forest are adjusted as needed to reduce impacts to natural resources or to reduce conflicts between users.

Ecosystems on the Forest:

- Have ecological and watershed integrity, meaning they have a viable combination of all the diverse elements and processes needed to sustain systems and to perform desired functions,

- Are dynamic in nature and resilient to natural and man-caused disturbances,

- Have a range of vegetative composition and structure that provide habitat for native and desired non-native plant, wildlife, and aquatic species,

- Are managed in an environment of public and interagency trust, and cultural and socio-economic sustainability,

Ecosystems have the following physical, biological, social, and economic components and conditions:

- Soils are productive and in a condition that promotes vegetative growth, hydrologic function, long-term nutrient cycling, and erosional stability. Streams and lakes provide clean water, appropriate temperatures, and a variety of connected habitats to support native and desired non-native aquatic species.

- Terrestrial and aquatic communities are within desired conditions for composition, structure, patterns, and processes. Vegetation forms a diverse network of habitats and connective corridors for wildlife, and provides snags, coarse woody material, and soil organic matter.

- Habitats support species diversity, with emphasis on maintaining or restoring populations of game and non-game wildlife and fish; TEP and sensitive species; and rare plant communities. Riparian areas connect upland and aquatic habitats, and promote stable and diverse stream channel conditions. Existing non-native invasive species populations are not expanding and new invader species are not becoming established.

- Fire is used to manage vegetation where needed to enhance ecosystem resiliency in fire-adapted communities and lower hazardous fuel levels.

- Recreational settings range from semi-primitive to developed, offering a wide spectrum of opportunities and uses. Facilities--such as roads, trails, campgrounds, and administrative sites--are constructed, reconstructed, or eliminated as needed to provide a balance of safe, effective, and environmentally responsible recreational opportunities. Visitors enjoy a variety of special attractions, including the National Recreation Area, Wilderness, Scenic Areas, The Highland Scenic Highway, recreational complexes, historic landmarks, and Botanical Areas. People have the opportunity to explore and learn about cultural heritage. Significant cultural sites are preserved and accessible.

- Forest ecosystems provide a variety of sustainable products and services for current and future generations. Timber, range, wildlife, water, recreation, minerals, and special use programs offer opportunities for economic development, and contribute to local community needs, while maintaining ecological integrity.

Sites Homestead – Near Seneca Rocks

Air Quality

Forest Service Manual and Handbook management direction for air quality is in FSM 2500 - Watershed and Air Management.

DESIRED CONDITIONS

Visitors to the Forest have the opportunity to experience clean air and clear vistas in a natural setting, while recognizing that the region is affected by human-caused pollution, predominantly from sources external to Forest boundaries. Ambient air quality across the Forest meets or exceeds all applicable state and federal standards, while visibility and deposition monitoring data show continued decreasing trends in sulfates.

Management Direction for Air Quality		
Type	**Number**	**Direction Description**
Goal	AQ01	Improve and maintain air quality and Air Quality Related Values (AQRVs) through a cooperative working relationship with agencies managing air quality, while achieving management goals and objectives. a) Review, evaluate, and provide recommendations on Prevention of Significant Deterioration (PSD) permits that may affect current class I area AQRVs. b) Provide comments to air quality agencies on regulatory efforts that impact air quality in Dolly Sods and Otter Creek class I areas. c) Participate in regional planning organizations and efforts that are examining ways to reduce impacts to visibility and other AQRVs in Class I areas of the region.
Objective	AQ02	Reduce air pollution impacts to the Air Quality Related Values (AQRVs) of the class I areas on the Forest to improve AQRV conditions over current adversely affected levels.
Standard	AQ03	Use screening procedures specific to Dolly Sods and Otter Creek Wildernesses and federal land manager AQRV guidance when reviewing Prevention of Significant Deterioration (PSD) permits.
Standard	AQ04	Conduct management activities (including permitted activities) in a manner that does not result in a significant contribution to a violation of National Ambient Air Quality Standards, a violation of applicable provisions in the State Implementation Plan, or an adverse impact to AQRVs in Dolly Sods and Otter Creek Wildernesses.
See also Fire Management Goal FM08 and Standards FM12, FM14, FM15, FM16. Additional management direction for Class I areas can be found in the Air Quality section of Management Prescription 5.0 – Designated Wilderness - in Chapter III.		

`

Soil and Water Resources

Forest Service Manual and Handbook management direction for soil and water resources is in FSM 2500 - Watershed and Air Management, and FSM 3500 - Cooperative Watershed Management; and in FSH 2500, 2509.13 - Burned-Area Emergency Rehabilitation, FSH 2509.18 - Soil Management, and FSH 2509.22 - Soil and Water Conservation.

DESIRED CONDITIONS

Soil protective cover, soil organic matter, and coarse woody material are at levels that maintain the natural infiltration capacity, moisture regime, and productivity of the soil. Soils also have adequate physical, biological, and chemical properties to support desired vegetation growth. Exposed mineral soil and soil compaction from human activity may be present but are dispersed and do not impair the productivity and fertility of the soil.

Wetlands and floodplains function as detention/retention storage areas for floodwaters, sources of organic matter, and habitat for aquatic and riparian species. Improving watershed conditions contribute to the de-listing of water quality limited water bodies to meet Clean Water Act requirements and state water quality management rules. Stream channel and bank stability is protected during management activities.

Streams are in dynamic equilibrium; that is, stream systems normally function within natural ranges of flow, sediment movement, temperature, and other variables that provide for healthy aquatic systems. The physical integrity of aquatic systems, stream banks, channel substrates and other habitat components are intact and stable. Where channel shape is modified (e.g., road crossings), the modification preserves channel stability and function. Streamside vegetation contributes to the protection and maintenance of water quality, water quantity, nutrient inputs, and physical channel integrity to support channel function, aquatic biota, aquatic and wildlife habitat, floodplain function, aesthetic values and designated uses.

Management Direction for Soil and Water		
Type	**Number**	**Direction Description**
Soils		
Goal	SW01	Maintain, restore, or improve soil quality, productivity, and function. Manage soil disturbances from management activities such that they do not result in long-term loss of inherent soil quality and function.
Goal	SW02	Collect, interpret, and display information on Forest soils to: a) Determine the kinds and intensities of soil resource inventories needed, b) Identify relationships between soil types and the growth of trees or other vegetation, c) Predict effects to soil and water resources caused by various management options applied to specific tracts of land, d) Provide information to aid in multiple-use management on that does not impair the productivity of the land, and e) Identify limitations on management practices and mitigation measures by soil mapping unit for activities that have potential to impact soil and water resources.

Management Direction for Soil and Water		
Type	**Number**	**Direction Description**
Standard	SW03	Disturbed soils dedicated to growing vegetation shall be rehabilitated by fertilizing, liming, seeding, mulching, or constructing structural measures as soon as possible, but generally within 2 weeks after project completion, or prior to periods of inactivity, or as specified in contracts. Rip compacted sites when needed for vegetative re-establishment and recovery of soil productivity and hydrologic function. The intent is to minimize the time that soil is exposed on disturbed sites or retained in an impaired condition.
Standard	SW04	Erosion prevention and control measures shall be used in program and project plans for activities that may reduce soil productivity or cause erosion.
Standard	SW05	Maintain at least 85 percent of a vegetation management activity area in a non-detrimentally disturbed condition. Existing system roads and trails, and other administrative facilities within the activity area, are not considered detrimentally disturbed conditions when assessing compliance with this standard.
Standard	SW06	Severe rutting resulting from management activities shall be confined to less than 5 percent of an activity area.
Standard	SW07	Use of wheeled and/or tracked motorized equipment may be limited on soil types that include the following soil/site area conditions: a) Steep Slopes (40 to 50 percent) – Operation on these slopes shall be analyzed on a case-by-case basis to determine the best method of operation while maintaining soil stability and productivity. b) Very Steep Slopes (more than 50 percent) – Use is prohibited without recommendations from interdisciplinary team review and line officer approval. c) Susceptible to Landslides – Use on slopes greater than 15 percent with soils susceptible to downslope movement when loaded, excavated, or wet is allowed only with mitigation measures during periods of freeze-thaw and for one to multiple days following significant rainfall events. If the risk of landslides during these periods cannot be mitigated, then use is prohibited. d) Soils Commonly Wet At Or Near The Surface During A Considerable Part Of The Year, Or Soils Highly Susceptible To Compaction. Equipment use shall normally be prohibited or mitigated when soils are saturated or when freeze-thaw cycles occur.
Standard	SW08	Management actions that have the potential to contribute to soil nutrient depletion shall be evaluated for the potential effects of depletion in relation to on-site acid deposition conditions.
Standard	SW09	Winter logging is allowed but may only be used where it will meet Forest-wide soil and water quality standards.
Guideline	SW10	Inventory the soil resource to the appropriate intensity level as needed for project planning and/or design considerations.
Guideline	SW11	Soil stabilization procedures should take place as soon as practical after earth-disturbing activities are completed or prior to extended periods of inactivity. Special revegetation measures may be required.
Guideline	SW12	Use Forest-wide soils map(s) and county soil survey report interpretations to help determine soil characteristics and protection needs.
Guideline	SW13	Consider liming soils with a surface pH of less than 5.5 on seeding projects, except where there is an objective to maintain acidic ecosystems.
Guideline	SW14	Mulch should be applied on severely eroded areas, or areas with high potential for erosion, such as new road cut and fill slopes.
Guideline	SW15	Topsoil should be retained to improve the soil medium for plant growth on areas to be disturbed by construction. Topsoil should be salvaged from an area during construction and stockpiled for use during subsequent reclamation, or obtained from an alternate site. On some areas, soil material may have to be added to obtain vigorous plant growth. Soil to be used for this purpose should have chemical tests made to determine its desirability for use.

Management Direction for Soil and Water		
Type	**Number**	**Direction Description**
Guideline	SW16	Where the removal of vegetative material, topsoil, or other materials may result in erosion, the size of the area may be limited from which these materials are removed at any one time.
Guideline	SW17	During watershed or project-level analysis, incorporate soil protection or improvement into project planning through an awareness of: a) Soil, geology, and landform conditions; b) The inherent capability of the soils involved; and c) The degree and duration of soil disturbance.
Guideline	SW18	Topsoil or substitute materials used in reclamation should consist of friable soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign material.
Guideline	SW19	Management activities that may result in accelerated erosion and loss of organic matter should have one or more of the following practices applied to mitigate potential effects: a) Limiting mineral soil exposure, b) Appropriately dispersing excess water, c) Ensuring sufficient effective groundcover, d) Stabilizing disturbed soils through revegetation, mulching, or other appropriate means, e) Preventing or minimizing excessive compaction, displacement, puddling, erosion, or burning of soils, and f) Preventing or minimizing the initiation or acceleration of mass soil movement (e.g., slumps, debris flows, or landslides).
Water Quality and Hydrology		
Goal	SW20	Manage watersheds to sustain healthy aquatic systems, achieve desired conditions, and meet state designated water uses.
Goal	SW21	Minimize non-point source pollution from management actions through project design and mitigation.
Goal	SW22	Provide for management, maintenance, and flow regulation of existing impoundments.
Standard	SW23	Logging and construction equipment shall not be washed in stream courses, nor shall material from washed equipment be allowed to drain into surface waters.
Standard	SW24	No new grazing allotments shall be permitted within municipal watersheds.
Guideline	SW25	New road crossings of stream channels should be located at least one mile upstream from a municipal intake.
Guideline	SW26	Management activities should maintain stream flow regimes to provide for channel stability and stream functions that support healthy riparian habitat, aquatic habitat, and downstream uses.
Guideline	SW27	Project activities proposed within municipal watersheds should be coordinated with the water district or municipality served, if the activities have the potential to affect the municipal water supply.
Guideline	SW28	Soil and water resource improvements within municipal watersheds should be prioritized by the following criteria: a) Protection of public health b) Maintenance of previous capital investments and improvements in the production of market goods and services. c) Improvement of all other renewable resources.
Stream Channels, Lakes, and Wetlands		
Goal	SW29	Maintain or restore riparian and floodplain function, including floodwater retention and storage.
Goal	SW30	Maintain surface and ground water sources to support healthy riparian and aquatic habitats, wetlands, channel function, and downstream uses.

<table>
<tr><th colspan="3">Management Direction for Soil and Water</th></tr>
<tr><th>Type</th><th>Number</th><th>Direction Description</th></tr>
<tr><td>Goal</td><td>SW31</td><td>Maintain, enhance, or restore vegetation conditions that provide:
a) Ecological functions of riparian, wetland, and aquatic ecosystems.
b) Canopy conditions that regulate riparian and stream temperature regimes for native and desired non-native fauna and flora.
c) Natural recruitment potential for large woody debris and other sources of nutrient inputs to aquatic ecosystems.
d) Bank and channel stability and structural integrity.
e) Habitat and habitat connectivity for aquatic and riparian-dependent species and upland species that use riparian corridors.
f) Buffers to filter sediment.</td></tr>
<tr><td>Goal</td><td>SW32</td><td>During watershed or project-level analysis, assess existing or proposed road stream crossings for effects to stream channel form and function, including channel stability, passage of storm flows and associated debris, and passage of aquatic organisms. Prioritize crossings to address or correct identified concerns.</td></tr>
<tr><td>Goal</td><td>SW33</td><td>During watershed or project-level analysis, identify and prioritize measures to mitigate resource damage caused by existing facilities.</td></tr>
<tr><td>Standard</td><td>SW34</td><td>No programmed timber harvest shall occur within the channel buffers identified in the table in SW37. Tree removal from the buffers may only take place if needed to meet aquatic or riparian resource management needs, or to;
a) Provide habitat improvements for aquatic or riparian species, or threatened, endangered, sensitive, and locally rare species;
b) Provide for public or worker safety;
c) Construct or renovate an approved facility;
d) Construct temporary road, skid road, or utility corridor crossings;
e) Conduct aquatic or riparian-related research, or
f) Allow for cable yarding.</td></tr>
<tr><td>Standard</td><td>SW35</td><td>Where new roads and skid roads cross stream channels, channel and bank stability shall be maintained.</td></tr>
<tr><td>Standard</td><td>SW36</td><td>When stream crossing structures are removed, stream channels shall be restored to their near-natural morphology (width, depth, and gradient associations for streambeds, bands, floodplains, and terraces). Disturbed soil shall be stabilized.</td></tr>
<tr><td>Standard</td><td>SW37</td><td>During project-level planning and implementation, determine channel buffers for streams that would potentially be affected by proposed activities. The following table represents default buffer widths to be applied to both sides of the channel.
<table>
<tr><th>Stream Classification</th><th>Buffer Width</th></tr>
<tr><td>Perennial</td><td>100 feet</td></tr>
<tr><td>Large Intermittent (>50-acre drainage area)</td><td>100 feet</td></tr>
<tr><td>Small Intermittent (<50-acre drainage area)</td><td>50 feet</td></tr>
<tr><td>Ephemeral</td><td>25 feet</td></tr>
</table>
Buffer widths may be adjusted based on interdisciplinary review and site-specific field investigation. The buffers shall, at a minimum, encompass the riparian area defined on the basis of soils, vegetation and hydrology and the ecological functions and values associated with the riparian area.</td></tr>
<tr><td>Standard</td><td>SW38</td><td>The removal of large woody debris is allowed if it poses a risk to water quality, degrades habitat for aquatic or riparian wildlife species, or when it poses a threat to public safety (e.g., water recreation), private property, or Forest Service infrastructure (e.g., bridges). The need for removal is determined on a case-by-case basis with consideration for aquatic and riparian resource needs.</td></tr>
<tr><td>Standard</td><td>SW39</td><td>Use no-till cultivation methods for wildlife opening maintenance within channel buffers.</td></tr>
</table>

Management Direction for Soil and Water		
Type	**Number**	**Direction Description**
Standard	SW40	Skid trails and landings shall not be constructed within 100 feet of perennial, intermittent, and ephemeral channels except at crossings or when location outside the 100-foot zone pose a greater risk to aquatic or riparian resources. The 100-foot filter strip may be modified based on site-specific conditions such as soil type, slope, and stability.
Standard	SW41	Corralling or overnight tethering of horses or other livestock is not allowed within 100 feet of stream courses or lakes. Existing corral sites may be maintained until alternative sites are developed, provided impacts to water quality and stream channels are mitigated.
Standard	SW42	New trails, campsites, and other recreational developments shall be located, constructed, and maintained to minimize impacts to channel banks and other riparian resources.
Standard	SW43	Channel buffers shall not be available for commercial mineral material development.
Standard	SW44	New roads are allowed within channel buffers but are restricted to essential crossings. Construction of roads parallel to the channel shall be avoided within the channel buffer.
Standard	SW45	New roads within the channel buffer shall be designed to minimize impacts on aquatic and riparian resources.
Standard	SW46	New structures (culverts, bridges, etc.) shall be designed to accommodate storm flows expected to occur while the structures are in place. Use scientifically accepted methods for calculating expected storm flows.
Standard	SW47	Personal use firewood shall not be removed from stream channels or banks.
Guideline	SW48	Existing trails in channel buffers may be reconstructed or relocated to reduce impacts to riparian and aquatic resources.
Guideline	SW49	Closure orders may be used to control environmental impacts caused by dispersed recreation.
Guideline	SW50	Maintained wildlife openings and associated access routes identified as degrading riparian or aquatic conditions should be mitigated or closed and restored. New wildlife openings within channel buffers may occur where needed to provide habitat for riparian species, or TEP, RFSS, or locally rare species, and where maintenance for these openings and their access routes can be achieved without degrading riparian or aquatic conditions.
Guideline	SW51	Ground disturbance should be avoided within seeps, vernal pools, bogs, fens, and other wetlands during project implementation. These areas should be managed to protect wet soils and rare plants and provide wildlife watering sources using the following protection: a) No new system roads or skid roads should be located within these areas except at essential crossings. Such crossings should be designed to minimize disturbance to the extent practical. b) Logs should not be skidded through these areas. Keep slash and logs out of them. c) Where available, a canopy of 60-100 percent crown closure should be maintained within and adjacent to these areas, unless a more open canopy is needed for TEP species or RFSS management. d) Mast trees or shrubs may be planted in seeps if mast plants are currently lacking.
Guideline	SW52	Cable yarding that crosses channel buffers should avoid or mitigate adverse effects to the stream channel. Crossing should be at as near a right angle as possible, with full suspension preferred. Trees cut within channel buffers to provide cable corridors may be left on site for woody debris recruitment and erosion control.
Guideline	SW53	Use existing fire barriers, such as streams, roads, and trails for control lines where possible.
Guideline	SW54	Hand lines, wet lines, or black lines should be used where appropriate within channel buffers to minimize soil disturbance from fire suppression or control.
Guideline	SW55	New trails should not be located within channel buffers except at crossings, to control access to water bodies, or when location outside the buffer would pose greater risk to aquatic or riparian resources.
Guideline	SW56	Designated livestock stream crossings and watering points should be located, sized, and maintained to minimize impacts to aquatic and riparian resources.

Management Direction for Soil and Water		
Type	**Number**	**Direction Description**
Guideline	SW57	Improvements that invite concentrated livestock use—such as feed troughs, corrals, or salt/mineral blocks—should be located at least 100 feet from a channel, lake, or wetland.
Guideline	SW58	Watering troughs should be used where feasible to protect aquatic and riparian resources.
Guideline	SW59	Where private minerals are explored or developed within channel buffers, work with mineral developers to minimize disturbance to aquatic and riparian resources.
Guideline	SW60	Crossings should be designed so stream flow does not pond above the structure during normal flows to reduce sediment deposition and safely pass high flows.
Guideline	SW61	Work with special use permittees to mitigate effects from their operations to soil, water, and aquatic resources within channel buffers.
Guideline	SW62	Stream crossing construction on temporary and permanent roads should be completed as soon as practical, with mitigation as needed to minimize the potential for sedimentation.
See also Fire Management Goal FM03, Vegetation Goal VE01, Wildlife and Fish Goal WF04, Wild and Scenic River Goal WS02, Range Goal RA03, Minerals Goal MG02, Lands and Special Uses Goals LS17 and LS20, Roads and Facilities Goal RF02, Wildlife and Fish Objective WF12, Roads and Facilities Objective RF03, Fire Management Standard FM12, Vegetation Standards VE32 and VE34, Wildlife and Fish Standard WF14, Heritage Resources Standards HR05 and HR06, Timber Standards TR05 and TR08, Range Standards RA04, RA12, RA13, RA14, RA15; Minerals Standards MG 08, MG12, MG13, MG 15, MG17, MG32, MG33, MG34, MG38, MG41, MG42, MG43, MG48; Lands and Special Uses Standards LS23 and LS24, Roads and Facilities Standards RF06, RF07, RF29; Fire Management Guidelines FM19 and FM20, Vegetation Guideline VE06, Wildlife and Fish Guidelines WF19, WF21, WF22; Recreation Guideline RC32, Scenery Guidelines SM04 and SM05, Heritage Guideline HR12, Timber Guidelines TR10 and TR11, Range Guideline RA18, Minerals Guidelines MG20 and MG24, Lands and Special Uses Guideline LS05, Roads and Facilities Guidelines RF09, RF10, RF13, RF14, RF23.		

Otter Creek – Otter Creek Wilderness

Fire Management

Forest Service Manual and Handbook direction for fire management is in FSM 5100 – Fire Management, and in FSH 5109.

DESIRED CONDITIONS

Fire is used as a tool to achieve and maintain desired vegetative conditions and fuel levels. Fire is actively suppressed where necessary to protect life, investments, and valuable resources. Fire operates within fire regimes appropriate to the vegetation type and management objectives, and helps maintain fire-adapted ecosystems. Pre-fire suppression conditions are maintained or restored where consistent with management prescription emphasis.

Management Direction for Fire Management		
Type	**Number**	**Direction Description**
Goal	FM01	Make firefighter and public safety the first priority in all fire management activities.
Goal	FM02	Provide for Forest fire prevention and protection consistent with public safety, resource values and management objectives. a) Contribute to national, regional or local fire prevention, suppression, and prescribed fire efforts by providing resources, expertise, and training. b) Participate in fire prevention programs or efforts, such as Firewise, that reduce the risks of wildfire in the wildland-urban interface.
Goal	FM03	Reduce wildfire risk to communties, municipal water supplies, and at-risk federal land by maintaining or restoring fire-resilient forest stands.
Goal	FM04	Maintain or restore late successional stands to a pre-fire suppression condition consistent with management prescription emphasis and desired conditions.
Goal	FM05	Establish a framework for restoring and maintaining the role of fire in fire-adapted ecosystems. During watershed and project level planning, identify and prioritize opportunities to maintain, enhance, or restore fire-adapted ecosystems.
Goal	FM06	Use prescribed fire to establish, maintain, control, or restore forest vegetation (e.g., oak regeneration and fire-resilient stands), wildlife openings, savannahs, and grazing allotments.
Goal	FM07	Prepare a Fire Management Action Plan to help implement Forest Plan Fire Management direction. Identify available resources and plan-specific prevention, detection, suppression, and prescribed burning actions based on the Fire Regime Condition Class and the following: a) An analysis of probable fire locations. b) Expected fire intensities c) Potential net resource value changes d) Risk to health and safety.
Goal	FM08	Design and implement prescribed fire projects so that emissions do not hinder the state from meeting air quality standards and attaining visibility goals.
Objective	FM09	Over the next 10 years use prescribed fire on 10,000 to 30,000 acres. Emphasize use in areas to reduce hazardous fuels and fire risk to property or investments, and/or in areas to maintain, restore, or enhance wildlife habitat or other ecosystem components.

Management Direction for Fire Management		
Type	**Number**	**Direction Description**
Objective	FM10	Identify potential fire hazard areas in wildland/urban interface areas. Focus on fire-adapted ecosystems in Fire Regime 1, Condition Class 3 and Fire Regime III, Condition Class 2. Develop and prioritize vegetation treatment plans in coordination with local volunteer fire departments, governments, agencies, and landowners to reduce the risk from wildland fire.
Objective	FM11	In conjunction with the State of West Virginia, develop and pursue a fire prevention program that maintains or reduces human-caused fire starts at or below a baseline average for the past decade. Focus prevention efforts on keeping fire starts low, while explaining the role fire plays in creating and sustaining certain ecosystems.
Standard	FM12	A prescribed burning plan must be prepared and approved prior to using prescribed fire as a management tool. The plan shall address protection or maintenance of TEP species and habitat, cultural resources, watershed resources, air quality, private property, and other resources or investments as needed or appropriate.
Standard	FM13	Wildland Fire Use may only occur under a fire management plan that evaluates a full range of management responses.
Standard	FM14	Use best available smoke management practices in prescribed fire design and implementation to avoid or mitigate adverse effects on public health and safety, or visibility in the Dolly Sods and Otter Creek Wilderness class I areas.
Standard	FM15	All managed burns must comply with Smoke Management Programs for West Virginia when these are implemented.
Standard	FM16	Demonstrate conformity with the State Implementation Plan for any prescribed fire planned within EPA designated “non-attainment” and “maintenance” areas.
Guideline	FM17	Activity fuels should be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives.
Guideline	FM18	Fire detection should be accomplished through the least expensive and most practical technique as demonstrated by historic patterns of local interaction (i.e., local citizens support fire suppression and detection efforts and promptly report wildfires to their local volunteer fire departments).
Guideline	FM19	Fire suppression forces should select the least resource-damaging suppression techniques based on human safety, potential loss of resources, and cost effectiveness. Mechanized equipment and fire retardants are allowed suppression techniques. Confinement may be an appropriate suppression strategy. Mechanized equipment may be used in stream channel buffers during fire emergency situations.
Guideline	FM20	After a fire is controlled, rehabilitate those areas that have the potential to adversely affect soil, water, or other resources. Fire lines should be revegetated and water-barred, where necessary, to prevent erosion. Water diversions may be used to keep sediment out of channels.
See also Vegetation Goal VE01, Air Quality Standard AQ04, Vegetation Standards VE13 and VE22, TEP Species Standard TE72, Wildlife and Fish Standard WF13, Recreation Standard RC28, Heritage Resources Standards HR05 and HR06, Roads and Facilities Standard RF19, Soil and Water Guidelines SW53 and SW54, Wildlife and Fish Guideline WF16, Heritage Resources Guideline HR12, Lands and Special Uses Guideline LS05, Roads and Facilities Guideline RF16.		

Vegetation

Forest Service Handbook management direction for vegetation is in FSH 2409.17 - Silvicultural Practices Handbook. Forest Service Manual and Handbook management direction for snags and coarse woody debris is in FSM 5150 – Fuels, FSM 2550 - Soil Management, and FSH 2509.18 - Soil Management Handbook. Direction for Threatened, Endangered, and Sensitive Plants is in FSM 2670 - Threatened, Endangered and Sensitive Plants and Animals. Direction for pesticide use management is in FSM 2150.

DESIRED CONDITIONS

Vegetation Diversity

Forested lands exhibit variable patterns of size classes, densities, structural stages, and species composition due to a combination of successional development, disturbance regimes, and management activities. Age class distribution ranges from openings maintained for wildlife habitat to a network of late successional stands.

Where vegetation development is primarily influenced by forest succession, late successional species composition is increasing, canopy cover densities are moderate to high, and late successional structure develops. While forest succession generally trends toward uneven-aged stands dominated by shade-tolerant tree species, disturbances such as wind throw, ice storm damage, insect and disease outbreaks, and fire contribute to differences in stand density, species composition, and structure in managed and unmanaged stands. Snags and coarse woody debris are present in sufficient quantities to provide for habitat diversity and long-term soil productivity.

Where vegetation development is influenced by management actions, forest succession will be interrupted in some areas to perpetuate early and mid-successional tree species and create age class diversity between stands. In some areas, forest management will perpetuate shade-intolerant or moderately tolerant tree species such as oaks. In these managed areas, a mixture of management activities and natural processes creates variety in size classes, structural stages, and species composition. Rotation ages and levels of harvest are such that stands of older trees also exist in actively managed areas, adding to the overall diversity of the landscape. Prescribed fire is also used where appropriate to manage oak forest types.

Rare Plants and Regional Forester's Sensitive Species (RFSS)

Rare plants and their habitats are protected and enhanced across the Forest through designation and management of Botanical Areas and Research Natural Areas, and through continued surveys and mitigation for species on the RFSS list. Rare plants and communities contribute to the biodiversity of the Forest and region.

Non-Native Invasive Plants

An early detection/rapid response strategy is employed to respond to new occurrences of non-native invasive plants that threaten forest, non-forest, and aquatic ecosystems. Existing and new

occurrences are prioritized for treatment based on threats to specific resources (rare plant species, tree species regeneration, visual effects, etc.) and ability to control the species. Native species and desired non-invasive non-native species are used to revegetate disturbed areas.

Pesticide Use/Integrated Pest Management

Outbreaks and resident populations of native and non-native pests are controlled to acceptable levels through careful use of pesticides and integrated pest management. An early detection/rapid response strategy is employed by the Forest to respond to new occurrences of plants, insects, and diseases that threaten forest and non-forest vegetation. Pesticide treatments achieve management objectives and pose little or no risk to humans and the environment.

Management Direction for Vegetation		
Type	**Number**	**Direction Description**
Vegetation Diversity		
Goal	VE01	Provide vegetative diversity through a mix of natural and maintained openings, wetlands, and early, mid, and late successional forests to support a wide variety of habitats, forage, scenery, recreational settings, and socio-economic opportunities.
Objective	VE02	Maintain or create age class diversity on suitable timberlands to provide for sustainable timber production and a variety of structure and wildlife habitat. Treat an estimated 20,000 to 40,000 acres over the next decade to move toward desired age class conditions.
Objective	VE03	Treat an estimated 4,000 to 12,000 acres over the next decade on lands not suited for timber production to help restore ecosystems and enhance wildlife habitat.
Guideline	VE04	Use lands unsuited for timber production (MPs 5.0, 6.2, 5.1, portions of 8.0) as patches of potential old growth. In MPs with suitable timberlands (MPs 3.0, 6.1, portions of 4.1), identify potential old growth areas based on management direction and emphasis, as well as information on delineating potential old growth in Appendix B.
Guideline	VE05	To provide for dispersion of vegetation diversity and a meaningful analysis of cumulative effects, mid-level and project planning should use watersheds (5th - 7th level, typically) as a unit of measurement to identify opportunities and analyze effects for vegetation management projects. Exceptions can be made for site-level activities such as hazard tree removal, localized timber stand improvement, or salvage.
Guideline	VE06	Native plant species should be used to revegetate, restore, or rehabilitate lands where natural regeneration is not likely to occur in a timely manner. Non-native, non-invasive plant species may be used: a) When needed in emergencies to protect resources (soil stability, water quality, etc) b) As an interim non-persistent measure to help re-establish native plants c) When native plant species are not available d) In permanently altered plant communities. When project objectives justify the use of non-native plant materials, documentation explaining why non-natives are preferred should be part of the project planning process.
See also the Vegetation Desired Conditions, Goals, and Objectives for Management Prescriptions 3.0, 4.1, and 6.1.		
Rare Plants and Regional Forester's Sensitive Plant Species		
Goal	VE07	Maintain or restore rare plant communities or individual populations to contribute to the biodiversity of the Forest.
Goal	VE08	Emphasize conservation and recovery of RFSS where quantity and quality of habitat is a concern. During watershed or project-level analysis in areas containing RFSS habitat, identify and prioritize opportunities for restoring or maintaining RFSS habitat.

Management Direction for Vegetation		
Type	**Number**	**Direction Description**
Goal	VE09	Work with researchers, ecologists, geneticists and other interested parties to develop seed zones or breeding zones for native plants.
Goal	VE10	Continue to identify potential Botanical Areas and recommend them for establishment.
Goal	VE11	Continue to work with the West Virginia Natural Heritage Program to identify rare plant and community occurrences on the Forest.
Standard	VE12	Allow collection of RFSS plants only for research or scientific purposes.
Standard	VE13	For management actions that have been identified by the Forest as likely to cause a negative effect on RFSS populations, negative effects shall be avoided or minimized to the maximum extent practical while still accomplishing the purpose of the project or action. Unavoidable negative effects shall be mitigated to the extent practical and consistent with the project purpose.
Guideline	VE14	Rare communities should be identified during project analysis. Management actions should avoid rare communities unless management is necessary to maintain, enhance, or restore a particular community. Conservation and management measures for rare communities should be determined on a case-by-case basis.
Guideline	VE15	Areas of non-native invasive plants within rare plant habitat should be identified and mapped during project-level analysis.
Guideline	VE16	Use Forest Service-approved portions of Conservation Strategies and Agreements, as appropriate, in the management of sensitive species habitat to help keep management actions from contributing to a trend toward listing for these species.
Terrestrial Ecosystems		
Guideline	VE17	Collect, interpret, and display information on terrestrial ecosystems to: a) Determine the kinds and intensities of inventories needed, b) Identify and classify rare communities to aid in conservation of threatened, endangered, and sensitive plants and animals, c) Add to the Terrestrial Ecological Unit Inventory (TEUI) of the Forest, d) Predict locations of rare plants or their habitats from the TEUI, and e) Predict effects to terrestrial ecosystems from various management options at the project level.
Guideline	VE18	Use the National Vegetation Classification system or other appropriate classification system, in the Forest TEUI. Assure that the TEUI is useful and meaningful to land managers at all levels.
Non-native Invasive Species (NNIS)		
Goal	VE19	Manage NNIS with an Integrated Pest Management approach, using prevention, education, eradication, containment, and control strategies in a coordinated effort that includes potentially affected resources, users, funding sources, and activities. a) Work to prevent new infestations of NNIS, with emphasis on areas where species have a high probability for establishment and spread. b) Work with WVDNR, utility companies, and special use operators to control NNIS in openings, rights-of way, and other use areas. c) During project-level analysis, identify and map areas of non-native invasive plants. Identify areas with extensive infestations where precautionary measures are necessary when planning and implementing management activities. d) Develop a Forest Non-native Invasive Species Management Plan in coordination with county, state, and federal agencies, including USFWS. e) Provide training to field-going personnel for detecting evidence of NNIS with potential for broad-scale vegetation impacts. f) Use the Forest-wide database and map library of NNIS and susceptibility to develop site-specific Integrated Pest Management approaches and strategies to manage these species.
Goal	VE20	Work with USDA State and Private Forestry and county extension agents to identify or develop sources for noxious weed free hay, straw, and mulch.

Management Direction for Vegetation		
Type	**Number**	**Direction Description**
Standard	VE21	On-Forest source sites for gravel and borrow materials shall be inspected for NNIS before materials are processed, used, or transported from the source site to the project area. Gravel or borrow material source sites with NNIS present shall not be used, unless effective treatment or other mitigation measures are implemented to prevent the spread of NNIS.
Standard	VE22	Projects that may contribute to the spread or establishment of noxious weeds shall be designed to include measures to reduce the potential for spread and establishment of noxious weed infestations.
Guideline	VE23	All seed used on National Forest System lands should be certified to be free of seeds from noxious weeds listed on the current *All States Noxious Weeds List*.
Guideline	VE24	NNIS management should determine the presence, location, and amount of infestations. Management strategies should also identify: a) Methods and frequency for treating infestations, b) Treatment procedures and restrictions, c) Reporting requirements, and d) Follow-up or monitoring requirements.
Guideline	VE25	Special use permits should include language where appropriate to reduce the risk of NNIS invasion and spread.
Integrated Pest Management		
Goal	VE26	Use Integrated Pest Management methods to minimize or prevent the development of pest problems (includes all pests, e.g., insects, disease, vegetative, or animal). Provide training to field-going personnel for detecting evidence of insect or disease activity.
Guideline	VE27	Where pest problems occur, the selection of corrective measures should take into account management objectives, effectiveness, safety, environmental protection, and cost.
Pesticide Management		
Goal	VE28	Provide for safe and effective pesticide use on the Forest when needed as part of an Integrated Pest Management strategy.
Standard	VE29	All permittee, licensee, and grantee pesticide-use proposals and plans shall be reviewed to ensure that pesticide use on NFS lands complies with FS requirements. Proposals and plans shall be approved by the appropriate line officer.
Standard	VE30	Allow utility companies to maintain their rights-of-way through NFS lands using pesticides and other integrated vegetation management treatments, based on an appropriate environmental analysis.
Standard	VE31	Aerial application of pesticides is prohibited when rain or foggy weather is present or predicted within 4 hours of application. Avoid aerial application when wind velocities would cause excessive drift, or high temperature or low relative humidity would prevent adequate coverage. Adjust droplet size to attain adequate coverage and reduce the risk of drift.
Standard	VE32	Unless specifically registered for aquatic use, ground application of pesticides shall be conducted such that they do not enter surface waters, wetlands, or sink holes.
Standard	VE33	Where broadcast sprays are used on federal projects, an untreated zone of at least 100 feet must be left adjacent to private property, unless the private property owners waive this restriction in writing.
Standard	VE34	When a water carrier is used on pesticide projects and water is drawn from natural sources, the natural source must be protected from back siphoning.
Standard	VE35	All reasonable efforts shall be made to notify adjacent landowners and persons within the treatment area prior to application of restricted use pesticides.
Guideline	VE36	During environmental analysis for pesticide use, other reasonable alternatives should be evaluated to achieve the purpose and need of the project.
Guideline	VE37	Pesticide application within or adjacent to developed recreation areas should be limited to periods when the potential of pesticide exposure to Forest users is minimal.

Management Direction for Vegetation		
Type	**Number**	**Direction Description**
Guideline	VE38	Use application techniques that provide proper pesticide placement on the target area or species. Low pressure spray equipment is preferred.
See also Soil and Water Goals SW02 and SW31, Fire Management Goal FM06, TEP Species Goals TE12 and TE29, Wildlife and Fish Goal 01, Scenery Goal SM01, Timber Goals TR01 and TR21, Range Goal RA11, Fire Management Objective FM10, TEP Species Objective TE30, Wildlife and Fish Objectives WF09, WF10, WF11; Timber Objective TR04, Soil and Water Standard SW03, TEP Species Standards TE14, TE23, TE24, TE25, TE30, TE31, TE32, TE33, TE35, TE36, TE37, TE42, TE43, TE58, TE59, TE64, TE67; Wildlife and Fish Standard WF13, Heritage Resources Standards HR05 and HR06, Range Standards RA04 and RA17, Minerals Standard MG15, Soil and Water Guidelines SW11, SW19, SW51; TEP Species Guidelines TE40, TE41, TE73, TE81; Wildlife and Fish Guideline WF16, Recreation Guideline RC15, Scenery Guideline SM06, Heritage Resources Guideline HR12, Range Guideline RA20, Lands and Special Uses Guideline LS32.		

Hemlocks in Snow – Stuart Recreation Area

Threatened, Endangered, and Proposed Species

Forest Service Manual and Handbook management direction for Threatened, Endangered, and Proposed (TEP) species is in FSM 2600 – Wildlife, Fish, and Sensitive Plant Habitat Management, and in FSH 2609.13 – Wildlife and Fisheries Program Management Handbook. See FSM and FSH direction for other appropriate resources in this section.

Although all threatened, endangered, or proposed species on the Forest may not be individually addressed in the Forest-wide management direction, the Forest is obligated to provide sufficient habitat to contribute to their survival and recovery. This obligation is spelled out in more detail in the Endangered Species Act, Forest Service Manual and Handbook direction, and various recovery plans, conservation strategies and agreements, and Memoranda Of Understanding. In addition, Section 7 consultation will occur at the project level for all proposed actions that may affect these species or their habitat. The Forest Plan does not authorize or implement specific actions and therefore cannot predict potential effects from these actions. The actions and effects would occur at the project level and will be addressed in consultation at that level.

DESIRED CONDITIONS

Habitats for Threatened and Endangered Species are managed to maintain or enhance populations consistent with established and approved Recovery Plans. TEP management is coordinated with management of other resources to contribute to species recovery and achieve multiple-use objectives. Habitats for Proposed species are managed to help preclude listing as Threatened or Endangered under the Endangered Species Act (ESA). Effects from Forest programs or activities are at levels that do not threaten the persistence of TEP species populations.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
General Direction		
Goal	TE01	Provide habitat capable of contributing to the survival and recovery of species listed under the ESA. Provide habitat that may help preclude Proposed species from becoming listed.
Goal	TE02	Integrate TEP habitat management with other resource objectives.
Goal	TE03	Work with USFWS, WVDNR, and other appropriate personnel to identify and manage habitat for TEP species. Participate in recovery plan development for threatened or endangered species that occur on the Forest, or that may be influenced by Forest management activities.
Goal	TE04	Within watershed-level planning units, identify TEP species habitat and opportunities to maintain, restore, or enhance habitat conditions. Design and implement management actions at the project level to address opportunities and provide for ecological conditions, population viability, reproductive needs, and habitat components for TEP species.
Goal	TE05	Collaborate on outreach programs for TEP species and their conservation needs.
Standard	TE06	When proposed exploration or development of privately owned mineral rights may adversely affect TEP species or habitat, the Forest shall work with state and federal mineral operation permitting agencies to reduce adverse effects.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Standard	TE07	Special use permits may be authorized in TEP species habitat if the uses do not adversely affect populations or habitat. This standard does not apply to Indiana bat or running buffalo clover. See special uses direction for these species, below.
Cave Habitat and Species		
Standard	TE08	Cave entry during closed periods for scientific study and observation may be permitted by Forest Supervisor's written approval and permit from USFWS or delegated authority.
Standard	TE09	Gates or fences installed at cave entrances shall allow free entry and exit by TEP species and shall not restrict normal airflows.
Standard	TE10	Gate installation that disturbs a cave feature or floor must have an archaeological survey prior to disturbance.
Standard	TE11	Gates and fences shall be monitored and maintained. Base monitoring frequency on past cave visits, access, and potential for disturbance. Maintenance and repair of gates shall be undertaken within a reasonable time frame from vandalism discovery.
Additional Forest-wide direction to address the needs of specific TEP species is identified below.		
Virginia Big-Eared Bat		
Goal	TE12	Within six miles of hibernacula, maternity colonies, and bachelor colonies, create or maintain a diversity of open, herbaceous habitats where consistent with MP emphasis.
Standard	TE13	Before taking actions on buildings that are within 6 miles of hibernacula, maternity colonies, or bachelor colonies, evaluate the buildings' potential to serve as roosting habitat and take action to avoid or minimize impacts as necessary. Actions (disposal, construction, reconstruction, etc.) are allowed during the hibernation period (November 16–March 31) without roosting habitat evaluation.
Standard	TE14	Within 200 feet of hibernacula, maternity colonies, or bachelor colonies, vegetation management shall only be conducted for: a) Bat habitat maintenance or improvement, b) Public safety, or c) Research.
Standard	TE15	New recreation facility construction is prohibited within 200 feet of hibernacula, maternity colonies, or bachelor colonies.
Standard	TE16	Prohibit public entry into caves and mines used as major hibernacula from September 1 to May 15. Minor hibernacula that harbor very few individuals in most years may remain open to the public if the Forest, USFWS, and WVDNR agree that public entry would be extremely unlikely to cause harm or mortality of Virginia big-eared bats.
Standard	TE17	Prohibit public entry into caves and mines used as maternity or bachelor colonies during the nursery season from April 1 to September 15.
Standard	TE18	Surface occupancy is not allowed for mineral operations on federal minerals that are within 200 feet of hibernacula, maternity colonies, or bachelor colonies.
Standard	TE19	Seismic exploration is prohibited within 200 feet of hibernacula, maternity colonies, or bachelor colonies unless it can be demonstrated that it would not have an adverse impact on bat populations or habitat.
Standard	TE20	Explosives shall not be used within 200 feet of hibernacula, maternity colonies, or bachelor colonies unless analysis can demonstrate that this activity will not have an adverse effect on bat populations or habitat**.** Explosives outside of this area shall not be used when such use has potential to damage the cave or disturb the bat.
Standard	TE21	New road or trail construction is prohibited within 200 feet of hibernacula, maternity colonies, or bachelor colonies.
Standard	TE22	If any new Virginia big-eared bat hibernacula, maternity colonies, or bachelor colonies are discovered on the Forest, the Forest shall develop appropriate protection measures in cooperation with USFWS and WVDNR. These measures could include closure orders, signs, fences, or gates.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Indiana Bat The following terms and definitions (see Glossary) are critical to understanding direction for Indiana bats: 1. Primary Range 2. Hibernacula 3. Key Areas 4. Maternity site		
Standard	TE23	Retain all shagbark hickory trees 5 inches in diameter at breast height (dbh) or greater in harvest units except where public or worker safety concerns or research opportunities exist.
Standard	TE24	After post-harvest treatments, retain an average of at least 6 snags per acre that are 9 inches dbh or greater within harvest units, except where public or worker safety concerns exist. Create additional snags, if needed, from the available leave trees to make up any difference. Prioritize snag retention and creation from the largest to the smallest dbh.
Standard	TE25	Retain all known roost trees until such time as they no longer serve as roost trees (e.g. lose their exfoliating bark or cavities, fall down, decay, or are no longer used by bats).
Standard	TE26	Where evidence of maternity colonies (reproductively active females or juveniles prior to August 15) is discovered, the Forest shall establish a 2.5-mile radius buffer around the evidence site and search for actual maternity colonies within this management zone. The radius may be adjusted if warranted by new scientific information. The search shall continue for 3 field seasons or until a maternity site is confirmed, whichever occurs sooner. While the search is ongoing, proposed actions in the management zone shall be reviewed in cooperation with USFWS and WVDNR to determine any site-specific protection measures that may be needed. If and when a maternity colony is found, the management zone shall be adjusted as specified in TE27. If no other evidence of maternity activity is found for 3 field seasons, the management zone shall expire.
Standard	TE27	If a maternity site is discovered, establish a management zone centered on the site. The management zone shall not exceed a 2.5-mile radius unless site-specific factors or new scientific information indicate that a larger zone is needed. The zone may be smaller than a 2.5-mile radius if an evaluation of topography, known roost tree locations, proximity of permanent water, or other site specific habitat characteristics indicates that a smaller zone is likely to satisfy the habitat needs of the colony. Needed protection measures within the zone shall be determined at a site-specific level in cooperation with USFWS and WVDNR.
Standard	TE28	If any new Indiana bat hibernacula are discovered on the Forest, the Forest shall develop appropriate protection measures in cooperation with USFWS and WVDNR. These measures could include closure orders, signs, fences, or gates.
Indiana Bat Primary Range		
Goal	TE29	Manage naturally occurring tree species composition to provide a continuous supply of suitable roost trees and foraging habitat for Indiana bat. Achieve vegetative diversity that maintains or improves Indiana bat habitat. Where consistent with management prescription emphasis, use a variety of silvicultural methods to create desired age class diversity.
Objective	TE30	Provide a continuous supply of suitable roost trees by maintaining a minimum of 50 percent of each primary range on NFS lands in any combination of mid successional (40-79 years), mid to late successional (80-120 years), and late-successional (>120 years) age classes.
Standard	TE31	Management of vegetation 5 inches dbh or greater may only be implemented if activities: a) Maintain or improve Indiana bat or other TEP or Sensitive species' habitat, or b) Address public or worker safety concerns, or c) Achieve research objectives.
Standard	TE32	Retain harvest unit snags greater than 5 inches dbh except where public or worker safety concerns exist.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Standard	TE33	Leave at least 5 cull trees per acre, if available—preferably shagbark hickory, bitternut hickory, red oak, white oak, sugar maple, white ash, green ash, and/or sassafras. Prioritize cull retention from the largest to the smallest dbh.
Standard	TE34	New livestock grazing areas shall not cause maintained openings to exceed 5 percent of each primary range. Allotment Management Plans shall be modified, if needed, to ensure allotment management is compatible with Indiana bat habitat management.
Standard	TE35	When designing and implementing regeneration harvest units, the following direction shall be used to help retain appropriate leave trees for Indiana bat habitat: a) Preferred residual trees for shelterwood and two-aged regeneration harvests should include the following species as available: shagbark hickory, bitternut hickory, red oak, white oak, sugar maple, white ash, green ash, and/or sassafras. Prioritize residual trees from the largest to the smallest dbh. b) Retain clumps of live trees and shrubs at a rate of 1/3 an acre per 5 to 8 acres of regeneration harvest area. Clumps should be co-located with other retained features.
Standard	TE36	Maintain a component of large over-mature trees, if available, in all uneven-aged harvest units to provide suitable roosting habitat.
Standard	TE37	Regeneration harvest shall not cause the early successional (0-19 years) age class of forest stands to exceed 10 percent of each primary range at any time.
Standard	TE38	Special use permits and federal mineral exploration and development may be allowed within the primary range if they are compatible with Indiana bat management.
Standard	TE39	Explosives may be allowed within the primary range if it can be demonstrated that this activity will not have an adverse effect on bat populations or habitat.
Guideline	TE40	Shelterwood and two-aged regeneration harvests are the preferred silvicultural methods. Alternate methods may be used to meet other vegetation or wildlife habitat objectives when compatible with Indiana bat habitat management. Thinning from below is the preferred management method for stands originating before 1905. Other appropriate or preferred measures to maintain or improve Indiana bat habitat within primary range may be developed under consultation with USFWS and WVDNR.
Guideline	TE41	Without preventing the regeneration of desired tree species, sufficient basal area should be retained in even-aged harvest units to meet the habitat needs of Indiana bats. Basal area determinations should be coordinated between the project silviculturist and wildlife biologist, based on site-specific vegetative conditions and habitat needs.
Indiana Bat Hibernacula, Key Areas, and Maternity Sites		
Standard	TE42	Management of vegetation that is less than 5 inches dbh generally may occur within 200 feet of the hibernacula, within key areas, or within 2.5 miles of known maternity sites during any time of the year, provided adverse disturbance to bats is avoided.
Standard	TE43	Management of vegetation 5 inches dbh or greater may only be implemented within 200 feet of hibernacula or within key areas to: a) Maintain or improve Indiana bat, TEP, or Regional Forester Sensitive Species habitat, b) Address public or worker safety concerns, or c) Achieve research objectives.
Standard	TE44	No new recreational facilities shall be constructed within 200 feet of hibernacula or within key areas.
Standard	TE45	Prohibit public entry into caves and mines used as major hibernacula from September 1 to May 15. Minor hibernacula that harbor very few individuals in most years may remain open to the public if the Forest, USFWS, and WVDNR agree that public entry would be extremely unlikely to cause harm or mortality to Indiana bats.
Standard	TE46	Construction or other permanent activities may only occur in key areas if they maintain or improve Indiana bat habitat or provide for public safety.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Standard	TE47	Do not issue permits for special uses occurring within 200 feet of hibernacula that would adversely affect Indiana bat populations or habitat.
Standard	TE48	Special use permits occurring within key areas and within 2.5 miles of maternity sites may be authorized if they are compatible with Indiana bat population maintenance or recovery.
Standard	TE49	Seismic exploration is not allowed within 200 feet of hibernacula, within key areas, or within 2.5 miles of maternity sites unless analysis can demonstrate it would not have an adverse impact on bat populations or habitat.
Standard	TE50	Explosives shall not be used within 200 feet of hibernacula, within key areas, or within 2.5 miles of active maternity sites, unless analysis can demonstrate that this activity will not have an adverse effect on bat populations or habitat. Explosives outside of these areas shall not be used when such use has potential to damage the cave or disturb the bat.
Standard	TE51	New road or trail construction is prohibited within 200 feet of hibernacula.
Standard	TE52	Surface occupancy for proposed federal mineral operations is not allowed within 200 feet of hibernacula or within key areas.
Standard	TE53	Surface occupancy for proposed federal mineral operations within 2.5 miles of maternity sites shall be evaluated on a case-by-case basis. Any surface occupancy must be compatible with Indiana bat population maintenance or recovery.
Standard	TE54	Establish and maintain a key area of at least 150 acres, if available, within each primary range.
Guideline	TE55	A key area should be contiguous and located as close to the cave as possible. Where available, this area should include 20 acres of late successional forest, and an additional 130 acres of mid-to-late successional or late successional forest.
Guideline	TE56	New road or trail construction should avoid key areas and maternity sites.
Cheat Mountain Salamander		
Goal	TE57	Identify opportunities to reduce fragmentation of populations and habitat.
Standard	TE58	Prior to proposed vegetation or ground disturbance in known or potential habitat, field surveys must be conducted and occupied habitat must be delineated.
Standard	TE59	Ground and vegetation-disturbing activities shall be avoided within occupied habitat and a 300-foot buffer zone around occupied habitat, unless analysis can show that the activities would not have an adverse effect on populations or habitat.
Bald Eagle		
Standard	TE60	Maintain 1,500-foot protection zones around nest sites that have been active within the last three nesting seasons. Activities within this zone must be compatible with bald eagle management. Compatibility determinations shall be made on a case-by-case basis.
Standard	TE61	Seasonal closure orders may be used to control human disturbance in the vicinity of nests.
Standard	TE62	A nest and the tree or structure where it is located shall not be removed or damaged as long as any usable portion of the nest remains, regardless of the time elapsed since the nest was last used, unless there is a concern for public health or safety.
West Virginia Northern Flying Squirrel (WVNFS)		
Standard	TE63	Suitable habitat shall be determined using maps collaboratively produced by the Forest, USFWS, and WVDNR. These maps shall be reviewed during watershed or project analysis and refined when Forest, USFWS, and WVDNR biologists determine that suitable habitat is or is not present. All verified capture sites shall be included in the suitable habitat maps.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Standard	TE64	Suitable habitat shall be considered occupied. Vegetation management activities in suitable habitat shall only be conducted after consultation with USFWS, and: a) Under an Endangered Species Act Section 10 research permit to determine the effects of an activity on WVNFS or to determine activities that would contribute to the recovery of the species, or b) To improve or maintain WVNFS or other TEP species habitat after research has demonstrated the beneficial effects of the proposed management, or c) When project-level assessment results in a no effect or may affect, not likely to adversely affect determination, or d) To address public safety concerns.
Standard	TE65	New developed recreation facilities, such as visitor centers or campgrounds, shall not be constructed in suitable habitat. Smaller facilities—such as foot trails, trailheads, picnic sites, ¼ acre vistas—may be constructed if they result in a no effect or may affect, not likely to adversely affect determination.
Standard	TE66	Development of federal gas and oil is generally allowed as long as: (a) it remains within the limits projected in the 1991 Environmental Assessment Oil and Gas Leasing and Development and (b) protection measures for WVNFS are developed through consultation with the USFWS prior to Forest Service approval of operations.
Shale Barren Rock Cress		
Standard	TE67	Vegetation manipulation and ground-disturbing activities are prohibited within shale barrens unless no feasible alternatives exist. Exceptions may be allowed for research or information-gathering activities.
Running Buffalo Clover		
Goal	TE68	Develop a conservation plan that incorporates measures to protect and/or enhance running buffalo clover populations to the extent practicable.
Goal	TE69	Coordinate with USFWS, WVDNR, and/or other state or private organizations to facilitate seed collection and storage efforts for running buffalo clover.
Standard	TE70	Special use permits occurring within occupied running buffalo clover habitat may be authorized only if they are compatible with population maintenance or recovery.
Standard	TE71	To the extent practicable, avoid implementing activities in areas that support running buffalo clover that have the potential to eliminate or have long-term detrimental effects to populations, such as placement of fill and gravel; paving; constructing new roads, well sites, or ditching for pipelines.
Standard	TE72	To the extent practicable, avoid conducting prescribed burns or constructing fuel breaks for prescribed burns through known running buffalo clover populations or habitat. If prescribed fire is used within running buffalo clover habitat, protect known populations by wetting or removing fuel from the immediate area.
Guideline	TE73	Where needed to help maintain or restore running buffalo populations, the Forest should implement habitat management measures such as creating selective canopy openings, initiating controlled levels of disturbance, controlling invasive species, or creating patches of potentially suitable habitat in adjacent areas. Measures should be coordinated with the USFWS and WVDNR prior to implementation, and include pre and post implementation site evaluations.
Guideline	TE74	Prior to changing access or use on roads or trails known to support running buffalo clover, estimates of potential frequency, timing, and severity of use should be made, and the Forest should develop appropriate protection measures in cooperation with USFWS and WVDNR.
Guideline	TE75	Surveys for running buffalo clover should be conducted June through no later than mid-August. Surveys should be conducted by personnel trained specifically to identify running buffalo clover.

Management Direction for TEP Species		
Type	**Number**	**Direction Description**
Guideline	TE76	Prior to initiating project activities, running buffalo clover locations should be flagged so that managers, contractors, permittees, or cooperators are aware of running buffalo clover locations, unless it is determined on a case-by-case basis that marking populations would have more potential to cause negative effects.
Guideline	TE77	Prior to initiating project activities, managers, contractors, permittees, or cooperators should be informed about avoiding or limiting management activities in the immediate vicinity of running buffalo clover populations within the project area. Projects should be monitored to ensure that populations are not detrimentally affected over the long term.
Guideline	TE78	Maintenance mowing should be timed to benefit the species by reducing competition from other plants while avoiding periods of flowering and seed set.
Guideline	TE79	When addressing private landowner access issues, work cooperatively with the landowner and the USFWS to minimize impacts to running buffalo clover. Inform the landowner of the presence of endangered species and the recommended actions to avoid impacts. Where possible, add conditions to Special Use Permits or develop written management agreements with the landowner in order to protect the species. If necessary, implement mitigation measures such as creating patches of potentially suitable habitat in adjacent areas, relocating plants or seeds, and/or constructing alternative access routes that would avoid long-term detrimental impacts to RBC.
Guideline	TE80	Piling slash around running buffalo clover populations should be avoided.
Guideline	TE81	Where possible, roads supporting running buffalo clover that are created or disturbed during timbering operations should be closed to additional traffic after the project is completed. Seeding/mulching plans should be coordinated to avoid the use of potentially invasive species, particularly non-native invasive species known to compete with running buffalo clover such as European white clover and red clover.
Guideline	TE82	If running buffalo clover populations are found within active grazing allotments, populations should be monitored to determine effects from grazing. If populations are being adversely affected by grazing activities, the allotment management plan should be adjusted appropriately to reduce or eliminate effects.
Guideline	TE83	Gating or restricting access to roads or trails should be implemented when monitoring of a running buffalo clover population shows signs of excessive disturbance from road or trail traffic.
See also Wildlife and Fish Goals WF01 and WF06, Vegetation Goals VE07 and VE08, Wildlife and Fish Objective WF09, Fire Management Standard FM12, Vegetation Standards VE12 and VE13, Wildlife and Fish Standard WF13, Minerals Standards MG09, MG34, MG48; Soil and Water Guideline SW51, Lands and Special Uses Guidelines LS04 and LS05.		

Wildlife and Fish

Forest Service Manual and Handbook management direction for wildlife resources is in FSM 2600 - Wildlife, Fish, and Sensitive Plant Habitat Management, and in FSH 2609.13 - Wildlife and Fisheries Program Management Handbook.

DESIRED CONDITIONS

The amount, distribution, and characteristics of habitat are present at levels necessary to maintain viable populations of native and desired non-native wildlife and fish species. For Regional Forester Sensitive Species (RFSS), management actions do not contribute to a trend toward federal listing. Human activities do not prevent populations from sustaining desired distribution and abundance, especially during critical life stages. Habitat conditions support populations of species of ecological, socio-economic, cultural, and recreational significance. The Forest works with the West Virginia Division of Natural Resources (WVDNR) to achieve agreed-upon wildlife management objectives.

Distribution of native and desired non-native fish and other aquatic species is maintained or is expanding into previously occupied habitat, with inter-connectivity between and within meta-populations. Efforts are in place to prevent new introductions of undesirable non-native fish species and to reduce degrading effects from past introductions. Restoration activities have resulted in maintaining necessary water temperatures, reducing pollutants such as sediment, and removing human-caused barriers to fish passage to restore populations and habitat connectivity where genetic contamination to native fish species from exotic species is not an issue.

Management Direction for Wildlife and Fish		
Type	**Number**	**Direction Description**
Goal	WF01	Provide habitat diversity that supports viable populations of native and desired non-native wildlife and fish species, including Management Indicator Species (MIS), game species, and furbearers, and keeps RFSS from a trend toward federal listing. a) During watershed or project-level analysis, identify and prioritize opportunities to maintain or restore habitat for RFSS, Birds of Conservation Concern, and other species of interest. b) Within watershed-level planning units, maintain, enhance, or restore representative examples of habitats that would be expected under unmanaged conditions, to the extent allowed by land ownership patterns, existing conditions, and management prescription emphasis.
Goal	WF02	Manage human-caused disturbances to help protect wildlife and fish populations during critical life stages.
Goal	WF03	Provide habitat for those wildlife and fish species that contribute to social and recreational opportunities, such as hunting, fishing, trapping, and wildlife viewing.

Management Direction for Wildlife and Fish		
Type	**Number**	**Direction Description**
Goal	WF04	Manage cold water streams to maintain or restore suitable habitat and native aquatic communities. a) During watershed or project-level analysis, identify and prioritize opportunities to improve water temperature and other habitat conditions. b) Restore connectivity in currently fragmented habitat where the risk of genetic contamination, predation, or competition from undesired fish species is not a concern. c) Use stream improvement structures where desirable to maintain or improve pool/riffle ratios, stream cover, and bank stability.
Goal	WF05	Maintain, enhance, or restore habitat for migratory birds, with an emphasis on Birds of Conservation Concern for the Appalachian Mountains Bird Conservation Region, as identified by USFWS. During watershed or project-level analysis, identify current and proposed activities that are likely to affect populations of Birds of Conservation Concern.
Goal	WF06	In conjunction with ongoing inventory and monitoring efforts, and in coordination with monitoring conducted by WVDNR, Forest Service Research, Universities, and other interested organizations, monitor populations and habitats of RFSS, MIS, Birds of Conservation Concern, and other species of interest sufficient to inform watershed and project-level analyses of potential negative effects, as well as opportunities for maintenance, enhancement, or restoration of habitat.
Objective	WFO7	Reduce aquatic habitat fragmentation associated with the Forest transportation system by correcting 30-50 passage barriers, according to aquatic priorities, over the next 10 years. Correct existing passage problems with bridges, open bottom arches, or other structures that restore or simulate channel conditions that facilitate upstream and downstream passage of aquatic organisms, or remove barriers when roads are decommissioned or closed.
Objective	WFO8	Actively restore aquatic and riparian habitat conditions in 30-50 miles of stream over the next 10 years. Activities that restore or improve the natural structure and function of channel and riparian conditions may include the installation of instream structures, large woody debris loading, riparian fencing, riparian planting, and bank and channel stabilization.
Objective	WF09	Maintain at least 50,000 acres of mid-late and late successional (>80 years old) mixed mesophytic and cove forest to meet habitat needs for cerulean warbler, a Management Indicator Species.
Objective	WF10	Maintain at least 150,000 acres of 50-150 year old oak and pine-oak forest in MPs 3.0 and 6.1 to meet habitat needs for wild turkey, a Management Indicator Species.
Objective	WF11	Maintain at least 20,000 acres of mid-late and late successional (>80 years old) spruce forest to provide optimum habitat for West Virginia northern flying squirrel, a Management Indicator Species. The long-term objective is to increase mid-late and late successional spruce forest to at least 40,000 acres.
Objective	WF12	Maintain at least 560 miles of coldwater stream habitat capable of supporting wild, naturally producing brook trout, a Management Indicator Species.
Standard	WF13	For management actions that have been identified by the Forest Service as likely to cause a negative effect on RFSS or Birds of Conservation Concern populations, negative effects shall be avoided or minimized to the maximum extent practical while still accomplishing the purpose of the project or action. Unavoidable negative effects shall be mitigated to the extent practical and consistent with the project purpose.

Management Direction for Wildlife and Fish		
Type	**Number**	**Direction Description**
Standard	WF14	For protection of cold water fisheries, apply the following to the channel buffers of perennial trout streams (stocked and native) during the period of October 1 to June 1: a) Potential sediment-producing ground disturbance exceeding two consecutive days shall only be initiated after consultation with a Forest fisheries biologist. b) Potential sediment-producing ground disturbance allowed during this period shall employ additional erosion control measures, seeding or mulching, applied concurrently with the activity.
Standard	WF15	When activities are proposed near a known active raptor nest, a wildlife biologist shall be consulted for measures to avoid or mitigate disturbance.
Guideline	WF16	When consistent with management prescription emphasis and direction, openings may be created and maintained in coordination with other resource projects to provide for vegetation diversity. Mechanical or chemical means, prescribed fire, or grazing may be used to help maintain openings. Native or desirable non-native, non-invasive trees and shrubs with high value for wildlife may be planted, released or pruned.
Guideline	WF17	Temporary, seasonal, or permanent closures may be implemented for areas and transportation routes to address concerns over human-caused disturbances during critical life stages such as nesting, denning, or spawning. Coordinate closures with WVDNR.
Guideline	WF18	Use Forest Service-approved portions of Conservation Strategies and Agreements, as appropriate, in the management of RFSS habitat to help keep management actions from contributing to a trend toward listing for these species.
Guideline	WF19	Management actions should be designed and implemented so they do not fragment habitat for native and desired non-native fish species.
Guideline	WF20	Activities with the potential for causing adverse effects should be avoided or mitigated to the extent possible within ½ mile of active peregrine falcon nests. Seasonal closure orders may be used to control human disturbance in the vicinity of peregrine falcon nests.
Guideline	WF21	Passage for fish and other aquatic organisms should be provided at all new or reconstructed stream crossings of existing or potential fish-bearing streams. Exceptions may be allowed to prevent the upstream migration of undesired species.
Guideline	WF22	Habitat improvement structures should be designed to complement riparian areas and management prescription emphasis. Improvement structures should be constructed of native materials where available.
Guideline	WF23	Coordinate with WVDNR on their proposed introduction, reintroduction, stocking, or transplanting of native or desired non-native species.
Guideline	WF24	Habitat maintenance, enhancement, and restoration opportunities for migratory birds that are identified during watershed or project-level analysis should be implemented to the extent they are consistent with management prescription emphasis and project purposes, and to the extent practical and allowed by budget constraints.
See also all direction for TEP Species; plus Fire Management Goal FM06, Recreation Goal RC07, Range Goal RA01, Fire Management Objective FM09, Vegetation Objectives VE01, VE02, VE03, Soil and Water Standards SW38 and SW39, Vegetation Standards VE13 and VE22, Heritage Resources Standards HR05 and HR06, Timber Standard TR08, Range Standard RA19, Soil and Water Guidelines SW26, SW50, SW51; Heritage Resources Guideline HR12, Timber Guidelines TR11 and TR24, Range Guideline RA08, Lands and Special Uses Guidelines LS03, LS04, LS05, LS30, and LS32; Roads and Facilities Guidelines RF12 and RF23.		

Recreation Resources

Forest Service Manual and Handbook management direction for recreation resources is in FSM 2300 - Recreation, Wilderness, and Related Resource Management, FSM 2710 – Special Use Authorizations, and FSM 2720 - Special Uses Administration; and in FSH 2309.18 - Trails Management Handbook, and FSH 2709.11 - Special Uses Handbook.

DESIRED CONDITIONS

People visiting the Forest find a wide spectrum of recreational opportunities. Diverse landscapes offer a variety of settings for recreational activities, ranging from semi-primitive non-motorized where there are opportunities for solitude, risk, and challenge; to a rural setting where there are opportunities for social interaction, comfort, and less risk. A variety of environmentally responsible access is provided for recreation users.

Recreation facilities are managed to provide a range of opportunities and development scales in a relatively safe environment. Recreation programs and facilities meet all applicable local, state, and national standards for health and safety. Accessibility is incorporated into facility and program access projects, while maintaining the development scale and setting of the area.

Dispersed recreation sites and uses are located in an environmentally responsible manner and managed to established standards. Various methods are used to manage recreation activities and facilities, and to mitigate adverse effects from recreation to other resources.

Conflicts between recreationists are reduced or addressed; while a broad array of recreation opportunities are available. Collaboration among users results in decisions that reduce conflicts between recreational and environmental needs. Local communities, partners, and volunteers are involved and benefit from their roles in providing recreational opportunities.

Interpretive exhibits, displays, and programs provide learning opportunities that enhance Forest visitor's experiences. Interpretive and educational efforts increase visitor awareness of the environmental effects of recreation use, and result in reduced adverse effects to other resources.

Authorized commercial developments and services meet established national standards and broaden the range of recreation opportunities and experiences provided on NFS lands.

Management Direction for Recreation Resources		
Type	**Number**	**Direction Description**
General Recreation		
Goal	RC01	Manage recreation opportunities using the Recreation Opportunity Spectrum (ROS) System, with an emphasis on recreation activities that require a large land area—such as hiking, hunting, mountain biking, and horseback riding—and facilities to support that use. Integrate resource protection and user safety into recreation management and facilities.
Goal	RC02	Manage recreation activities and programs consistent with the recreation integrated business management system standards.

Management Direction for Recreation Resources		
Type	**Number**	**Direction Description**
Goal	RC03	Manage for desired ROS settings across the Forest as indicated in the Management Prescription goals, objectives, or desired conditions for Recreation.
Objective	RC04	Provide an annual average of 75 miles of Trail Maintenance/Reconstruction in Wilderness, and 350 miles in non-wilderness areas.
Recreation System Planning		
Goal	RC05	Provide developed sites to support and supplement a wide range of recreation opportunities and settings, primarily where private or state development is not meeting demand or where a higher development scale is necessary to protect the environment.
Goal	RC06	Cooperate with counties, local governments, and convention and visitors bureaus in planning and joint efforts to promote recreation resources.
Goal	RC07	Promote barrier-free fishing facilities across the Forest.
Guideline	RC08	The ROS should be used to evaluate and tailor proposed projects and activities in order to maintain desired recreation opportunities and settings.
Guideline	RC09	Interpretive Service plans should emphasize information and interpretive programs that explain resource management direction and activities.
Guideline	RC10	Recreation use should be measured consistent with National Visitor Use Monitoring or other research techniques.
Developed Recreation Sites in Public Sector		
Goal	RC11	Give priority to the rehabilitation and upgrading of existing developed sites. Provide additional recreation facilities where needed and where the private sector is not likely to meet the demand. Design developed sites to compliment the adjacent or related ROS class, and be consistent with The Built Environmental Image Guide.
Goal	RC12	Provide accessible Forest facilities which are safe and convenient based on the ROS setting and development scale for the area.
Objective	RC13	Develop site-specific interpretive plans for visitor centers and interpretive facilities.
Objective	RC14	Prepare and update Operation and Maintenance Plans for developed recreation sites.
Guideline	RC15	In and around developed recreation sites, trees may be removed every year for safety or visual reasons.
Guideline	RC16	Location of recreational developments should be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.
Guideline	RC17	In and around developed recreation sites, commercial timber sales should normally occur between December 1 and April 1.
Developed Recreation Sites in Private Sector		
Standard	RC18	Private development of fuel, eating, camping, or other services shall not be permitted along the Highland Scenic Highway, unless clearly justified by site-specific corridor planning.
General Forest Areas		
Standard	RC19	Limit site occupancy to 14 days throughout the Forest, except as approved by the appropriate line officer.
Standard	RC20	Camping shall not be allowed within 300 feet of the Highland Scenic Highway.
Standard	RC21	Camping and day use are allowed on the Forest unless prohibited by closure order.
Standard	RC22	Commercially owned facilities are prohibited within the general forest area.
Standard	RC23	Horse or mechanized use may be prohibited on trails not designed or maintained for such use.

Management Direction for Recreation Resources		
Type	**Number**	**Direction Description**
Guideline	RC24	Facilities that may be provided in dispersed areas, consistent with the ROS, are: a) Sealed vault toilets. b) Trails and parking areas to reduce adverse impacts. c) Potable water. d) Access may be graveled, all-weather road. e) Trash collection facilities. f) Tables and fireplaces g) Bridges h) Shelters i) Stock facilities.
Caves		
Standard	RC25	Caves on the Forest shall be available for public recreation use except where prohibited or restricted by closure order.
Trails		
Goal	RC26	Manage the trail system to support a wide variety of recreation opportunities and settings.
Objective	RC27	Develop a Forest-wide trail management plan to establish trail classes, permitted uses, construction, reconstruction, and maintenance priorities.
Standard	RC28	Damage to or loss of system trails from timber harvest, road construction, mining, special uses, or prescribed fire activities shall be repaired or mitigated by the program initiating or proposing the activity.
Standard	RC29	If a trail is temporarily used as a road, relocate the trail for the duration of the project.
Standard	RC30	Cross-country ski trails or routes are allowed and may be designated or groomed. Grooming by cooperators shall be approved on a case-by-case basis.
Guideline	RC31	Log skidding and road construction should not cross trail corridors except at designated crossing sites or unless the trail is already located on a road.
Guideline	RC32	Maintenance and/or relocation of existing trails should take priority over new trail construction. Trail maintenance priorities are as follows: a) Reduction of hazards to trail users. b) Prevention and mitigation of resource damage. c) Trail marking and signing. d) Treadway clearing work needed for user enjoyment.
Guideline	RC33	Visual variety and scenic attractions should be integrated in determining new trail development or existing trail relocation.
Guideline	RC34	The Forest may authorize construction and maintenance of special purpose trails, if use is compatible with Forest Plan direction, Management Prescription emphasis, and the suitability of terrain.
Guideline	RC35	Established agreements with individuals or organizations to construct or maintain trails on the Forest should continue. New agreements should be considered on a case-by-case basis, and should be consistent with Forest Plan direction.
See also Vegetation Goal VE01, Wildlife and Fish Goal WF03, Scenery Goal SM01, Heritage Resource Goal HR02, Range Goal RA01, Roads and Facilities Goals RF01, RF02, RF15; Soil and Water Standards SW41 and SW42, Vegetation Standards VE13 and VE22, TEP Species Standards TE15, TE16, TE17, TE21, TE24, TE51, TE56, TE61, TE65; Heritage Resources Standards HR05 and HR06, Timber Standard TR08, Range Standard RA16, Minerals Standards MG09, MG19, MG29, MG28, MG29, MG30, MG31, MG37; Lands and Special Uses Standard LS07, LS14, LS22; Soil and Water Guidelines SW26, SW48, SW49, SW55; Vegetation Guideline VE37, TEP Species Guideline TE74, Wildlife and Fish Guidelines WF17 and WF20, Scenery Guidelines SM05 and SM08, Heritage Resources Guideline HR12, Timber Guideline TR12, Range Guideline RA08, Lands and Special Uses Guidelines LS03, LS05, LS23; Roads and Facilities Guidelines RF11, RF12, RF19, RF20, RF21, RF22, RF23, RF24, RF29, RF32.		

Scenery Management

Forest Service Manual direction for managing the scenic environment is in FSM 2380 - Landscape Management. Direction can also be found in the Scenery Management System (SMS) in Agriculture Handbook Number 701.

DESIRED CONDITIONS

The Forest provides diverse visual landscapes. The scenic environment ranges from landscapes displaying little or no evidence of management activities, to landscapes that have dominant visible evidence of management activities. Scenic integrity is maintained or enhanced in areas of high scenic value and other highly used recreation areas. In general, management activities blend in with the natural environment. The benefits, values, desires, and preferences regarding aesthetics and scenery are integrated into all levels of land management planning.

Direction for Scenery Management		
Type	**Number**	**Direction Description**
Goal	SM01	Management activities are consistent with Scenery Management System (SMS) and ROS, while meeting other resource needs (see ROS/Scenic Integrity Matrix below).
Guideline	SM02	Favor the use of naturally occurring colors in the choice of finishes for constructed facilities.
Guideline	SM03	Slope contouring should be used on road construction projects in areas of high visual sensitivity.
Guideline	SM04	Reduce color contrasts of exposed soil within the time limit specified by the adopted scenic integrity objective. Use mulch, topsoil, seeding, and fertilizing as appropriate.
Guideline	SM05	Road and trail structures—such as bridges, binwalls, and headwalls—should be designed to meet the Scenery Integrity Objective (SIO).
Guideline	SM06	Favor retention of large trees and an unbroken forest canopy at Forest entrances
Guideline	SM07	Utility corridors should be located to minimize visual impact. Where possible avoid areas with an SIO of high and very high..
Guideline	SM08	The SMS should be used to consider landscape character, scenic integrity levels, constituent information, and landscape visibiity when inventorying or analyzing effects to the scenery and landscape aesthetics proposed by other management activities. The following matrix should be used to provide a compatibility comparison of the SIO and ROS classifications.
See also Air Quality Goal AQ01, Fire Management Goal FM08, Vegetation Goal VE01, Range Goal RA01, Air Quality Standard AQ04, Fire Management Standard FM08, Timber Standard TR08, Minerals Standards MG08, MG13, MG15; Lands and Special Uses Standard LS25, Recreation Guidelines RC15 and RC33; Wild and Scenic Rivers Guideline WS04, Timber Guidelines TR12 and TR20, Range Guideline RA08, Minerals Guidelines MG25 and MG26, Lands and Special Uses Guidelines LS03, LS30, LS31; Roads and Facilities Guidelines RF13 and RF32.		

ROS and SIO Matrix Guidelines

ROS Class	Scenic Integrity Objectives				
	Very High	**High**	**Moderate**	**Low**	**Very Low**
Primitive	Norm	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Fully Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Fully Compatible	Fully Compatible	Norm (1)	Inconsistent	Unacceptable
Roaded Natural	Fully Compatible	Norm	Norm	Norm (2)	Inconsistent
Rural	Fully Compatible	Fully Compatible	Norm	Norm (2)	Inconsistent (3)
Urban	Fully Compatible	Fully Compatible	Fully Compatible	Fully Compatible	Not Applicable

1. Norm from sensitive roads and trails
2. Norm only in middle ground-concern level 2 (Mg-2) where a Roaded Modified subclass is used
3. Unacceptable in Roaded Natural and Rural where a Roaded Modified subclass is used. It may be the norm in a Roaded Modified subclass.

Lower Falls – Falls of Hills Creek Scenic Area

Wild and Scenic Rivers

Forest Service Handbook direction for managing eligible, suitable, and designated Wild and Scenic Rivers is in FSH 1909.12 - Land and Resource Management Planning, Chapter 8.2.

The following direction applies to eligible river segments. River corridors include the shorelines that generally extend a ¼ mile on either side of the eligible river segments. These segments are given a preliminary classification (Wild, Scenic, Recreational) based on varying levels of human activity. Rivers may be segmented into more than one classification.

DESIRED CONDITIONS

Rivers and their corridors that are determined eligible are managed to retain their free-flowing condition, their highest classification potential, and the outstandingly remarkable values identified until they are either designated as WSRs by Congress or returned to their original or assigned management prescription.

Management Direction for Wild and Scenic Rivers		
Type	**Number**	**Direction Description**
Goal	WS01	Manage river segments that are eligible for potential addition to the National Wild and Scenic Rivers System.
Goal	WS02	Emphasize the following in managing eligible rivers: a) Maintain or enhance the outstandingly remarkable values for which the river segment is eligible; b) Maintain the free-flowing character; c) Maintain or enhance values with the assigned classification; and d) Accommodate public use and enjoyment consistent with the river's outstandingly remarkable values.
Standard	WS03	When management actions are proposed that may compromise the outstandingly remarkable value, classification, or free-flowing character of an eligible Wild and Scenic River segment, a suitability study shall be completed for that eligible river segment prior to initiating the actions.
Guideline	WS04	The following Scenic Integrity Objectives should be assigned to the classifications of eligible Wild and Scenic River corridors: a) Very High to a Wild classification, b) High to a Scenic classification, c) Moderate or High to a Recreational classification.
See also Minerals Standard MG36, Lands and Special Uses Guideline LS05.		

Heritage Resources

Forest Service Manual management direction for the Heritage Program and cultural resources is in FSM 2360. Direction can also be found in the National Heritage Strategy.

DESIRED CONDITIONS

Heritage resources are identified and their eligibility as historic properties for inclusion in the National Register of Historic Places (NRHP) determined. If warranted, eligible sites are nominated for listing in the NRHP. Qualified researchers and scholars are provided access to data needed to further our knowledge of the prehistory and history of the area of the Forest and the region.

People visiting the National Forest can find opportunities to explore, enjoy, and learn about cultural heritage. As visitors travel through landscapes and experience diverse environments and cultures, they can make a personal connection with the land and people and have the opportunity to reflect on the relevance of the past and the land to their daily lives.

Management Direction for Heritage Resources		
Type	**Number**	**Direction Description**
Goal	HR01	Emphasize the protection of historic properties, completion of the Forest-wide heritage resources inventory, and evaluation of heritage resources. a) Identify heritage resources at the earliest stages of project planning and, when appropriate, evaluate their significance as historic properties eligible for inclusion in the NRHP. b) Preserve, protect, stabilize, monitor, interpret and, when appropriate, mitigate for loss of, or adverse effects to, historic properties. c) Manage heritage activities in a manner consistent with any current or future Programmatic Agreement entered into under ther terms of 36 CFR 800: Protection of Historic Properties.. d) Nominate historic properties for inclusion in the NRHP. e) Refine the current predictive model by incorporating up to date site location, geologic, hydrologic, soil and topographic data in a corporate database.
Goal	HR02	Identify opportunities for appropriate use and interpretation of heritage resouces. a) Increase public awareness, involvement, and appreciation of heritage resources through the expansion of stewardship and public service programs. b) Curate artifacts and records on Forest and make them available for study by qualified researchers.
Goal	HR03	Integrate archeological and historic knowledge into all levels of Forest planning. a) Incorporate current archeological and historic knowledge into the Forest's Cultural Resources Overview. b) Provide prehistoric and historic contexts for project-level planning that document the influences that human activities have had on past ecosystems.
Standard	HR04	Unevaluated heritage resources must be treated as eligible historic properties until evaluated.

Management Direction for Heritage Resources		
Type	**Number**	**Direction Description**
Standard	HR05	Projects shall be designed to avoid, minimize, or mitigate adverse effects to NRHP-eligible or unevaluated heritage resources. In-place protection of all identified eligible or unevaluated heritage resources is the minimum requirement. Heritage resources evaluated and determined not eligible for inclusion in the NRHP are afforded no such protection.
Standard	HR06	Conduct heritage resources surveys in the Area of Potential Effect of federal undertakings unless such areas have already been surveyed in a manner consistent with current professional standards. Surveys must be conducted under the guidance of a professional archeologist.
Standard	HR07	Review undertakings that may affect cultural resources to identify potential impacts. Compliance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, shall be completed before the responsible agency official signs the decision document.
Standard	HR08	Develop mitigation measures for each unevaluated, NRHP-eligible, or NRHP-listed heritage resource where direct and/or indirect management-related effects are probable.
Standard	HR09	Forest Service line officers shall stop ground-disturbing activities that impact or may impact known or newly-discovered heritage resources until the Forest Heritage Resources Program manager or qualified staff has made an on-site assessment of the resource and has completed appropriate cultural resources compliance. Heritage resources that have been evaluated and were determined not eligible for inclusion in the NRHP are afforded no such protection.
Guideline	HR10	Heritage resource artifact collections and records, and administrative history and archival data, should be curated in accordance with federal standards, and through consultation with SHPO and other interested parties.
Guideline	HR11	The eligibility of resources may be re-examined and changed if additional evidence or information about them becomes available.
Guideline	HR12	Confer with other resource specialists in the earliest planning stages of projects involving ground disturbance, diminished jurisdiction, increased public use of, or increased access to, a heritage resource.
Guideline	HR13	Criteria for interpretive suitability of sites, structures, and features of the built environment may include, but not be limited to: accessibility; property condition; protection considerations; compatibility with other resource activities or management prescriptions; and public interest or values.
Guideline	HR14	A management plan should be developed for each historic property nominated to the NRHP. The plan should be drafted during the nomination process.
Guideline	HR15	Historic structures and features of the built environment may be removed if they are not identified for possible administrative use or interpretive theme, or if they pose a risk to health or safety. The level of documentation for such structures and features to be removed may vary with the condition, significance, and recommendations of the SHPO and the Advisory Council on Historic Preservation.
See also Fire Management Standard FM12, TEP Species Standard TE10, Minerals Standard MG18, Lands and Special Uses Standard LS24, Lands and Special Uses Guideline LS05.		

Timber Resources

Forest Service Manual and Handbook direction for timber management is in the FSM 2400 - Timber Management, and in Forest Service Handbooks: 2409.13 - Timber Resource Planning Handbook, 2409.13a - Timber Permanent Plot Handbook, 2409.15 - Timber Sale Administration Handbook, 2409.17 - Silvicultural Practices Handbook, 2509.18 - Soil Management Handbook, 2609.13 - Wildlife and Fisheries Program Management Handbook, and 2509.22 – Soil and Water Conservation Practices Handbook. Sale implementation direction can also be found in Timber Sale Contract Provisions and procurement contracts.

DESIRED CONDITIONS

Suited timberlands provide sustainable and predictable levels of forest products. Forest products include, but are not limited to, fuelwood, post and poles, and sawlogs. The Forest provides a dependable source of large-diameter, high-quality sawtimber. Commercial timber harvest is a viable tool for accomplishing vegetation management objectives.

The Vegetation section in this chapter, and in Management Prescriptions 3.0, 4.1, and 6.1 in Chapter III contain desired conditions for species composition, tree age classes, snags, and coarse woody debris for a variety of vegetation groups.

Management Direction for Timber Resources		
Type	**Number**	**Direction Description**
Timber Resource Management Planning		
Goal	TR01	Manage vegetation to provide a sustained yield of timber, contribute to local and regional economies, achieve desired age class distributions, and benefit other resources.
Goal	TR02	Use appropriate harvest technologies to ensure cost efficiency and demonstrate prudent forest management, while addressing environmental concerns and preserving ecosystem integrity.
Objective	TR03	Make available 25 to 105 million cubic feet of timber for the decade, which will contribute to Allowable Sale Quantity (ASQ).
Objective	TR04	Provide timber harvest, and related reforestation and timber stand improvement activities, to contribute toward the attainment of desired vegetation conditions. On suitable timber lands, harvest timber, other than by salvage, on an estimated 20,000 to 36,000 acres over the next 10 years.
Standard	TR05	Whole-tree yarding shall be prohibited where site-specific soil inventories determine the need for on-site nutrient retention. Whole-tree yarding may be allowed elsewhere based on site-specific management objectives.
Standard	TR06	No more than 20 percent of NFS lands within each prescription area unit shall receive regeneration harvest over a 10-year period.
Guideline	TR07	Stands less than 10 acres in size should only be created to meet resource objectives other than timber production. Existing stands less than 10 acres should be maintained in the corporate database until such time that it is feasible to incorporate them with one or more adjoining stands.
Commercial Timber Sales		

Management Direction for Timber Resources		
Type	**Number**	**Direction Description**
Standard	TR08	Activity fuels (slash) shall be removed from permanent roads and recreation trails as part of normal harvest operations. Slash may be retained in wildlife openings if it is arranged into brush piles that would provide beneficial habitat structure without impeding wildlife movement and maintenance of openings. Slash may be retained in streams when considered beneficial for aquatic resources.
Guideline	TR09	Skid trails should normally be a minimum of 200 feet apart, but may be closer to adjust to ground conditions. System roads should not be used for skidding.
Guideline	TR10	System roads should not be used as log landings unless they are determined to be environmentally preferable and do not result in irreversible road damage. Within one growing season after completion of harvest activities, wildlife openings that are used as log landings should be rehabilitated using vegetation beneficial to wildlife.
Guideline	TR11	Log landings, equipment storage areas, portable sawmill sites, and other concentrated activities should be located outside of channel buffers.
Guideline	TR12	In and around developed recreation sites, activity fuel should be removed by chipping, burning, or other means, including opportunities for fuelwood gathering.
Guideline	TR13	Minimize bole damage by reducing the number of skid trails and using “bumper trees”.
Other Than Commercial Sales		
Goal	TR14	Provide firewood gathering opportunities to address local demands.
Standard	TR15	Trees must be both dead <u>and</u> down for personal use firewood, except where determined by the Forest to be a risk to public safety or in designated areas covered by the guideline below. Cutters must have personal use firewood permits.
Guideline	TR16	The Forest may make green firewood available to the public in designated areas. These areas should contribute to the accomplishment of resource management objectives.
Guideline	TR17	Closed roads may be opened temporarily for firewood collecting, depending on management prescription direction and potential impacts to other resources.
Silvicultural Systems		
Standard	TR18	Regeneration harvest units shall be separated by manageable stands of trees. This spacing requirement applies to regeneration units until regenerated trees have reached 20 percent of the height of the surrounding vegetation.
Guideline	TR19	Both even- and uneven-aged silviculture systems may be used to help meet management objectives. Base the choice of system and applicable harvest methods on the management prescription, the vegetation present, and/or the needs of other resources.
Guideline	TR20	Harvest openings in the immediate foreground, foreground or midground of visually sensitive areas should be irregular, natural-appearing shapes and sizes to blend in with the landscape.
Reforestation and Timber Stand Improvement (TSI)		
Goal	TR21	Manage for tree species composition that suits the potential vegetation of the site.
Standard	TR22	An area shall be considered reforested when it meets the stocking and species requirements specified in the detailed silvicultural prescription for the site-specific area.
Guideline	TR23	Sites should only be converted from one forest type to another (e.g. mixed hardwoods to red spruce or oak-hickory) as part of ecosystem restoration efforts.
Guideline	TR24	Consider the needs of other appropriate resources when prescribing TSI activities.
Guideline	TR25	Silvicultural operations should be identified during project planning in the detailed silvicultural prescriptions and scheduled in priority based on expected benefits and the objectives of the Management Prescription area.
Guideline	TR26	Reforestation prescriptions should include the consideration of genetically improved planting stock as an alternative practice.

Management Direction for Timber Resources		
Type	**Number**	**Direction Description**
See also Soil and Water Goal SW01, TEP Species Goal TE29, Scenery Goal SM01, Vegetation Objective VE02, Soil and Water Standards SW07, SW09, SW23, SW34, SW35, SW37, SW40; Vegetation Standards VE13 and VE22, TEP Species Standards TE23, TE24, TE30, TE31, TE32, TE33, TE35, TE36, TE37, TE58, TE59, TE67; Recreation Standards RC28 and RC29, Heritage Resource Standards HR05, HR06, HR09; Minerals Standard MG14, Fire Management M17, Vegetation Guideline VE04, Soil and Water Guidelines SW51 and SW52, TEP Species Guidelines TE40, TE76, TE77, TE80, TE81; Recreation Guidelines RC17 and RC31, Heritage Resources Guideline HR12, Minerals Guideline MG25, Lands and Special Uses Guideline LS10, Roads and Facilities Guidelines RF14 and RF15.		

Timber Sale Log Deck in Winter

Range Resources

Forest Service Manual and Handbook direction for rangeland resources is in FSM 2200 - Range Management, and FSH 2209 - Range Management, and includes both Service-wide and Regional Office direction.

DESIRED CONDITIONS

Grazing allotments are managed primarily for livestock grazing, wildlife habitat, visual diversity and dispersed recreation. A sustainable level of forage, consistent with other resource management direction, is available for use through the grazing permit system. Rangeland forage quality is maintained or improved in areas where vegetation management projects and range management actions occur. Riparian and upland areas within range allotments are functioning properly or have improving trends in vegetative composition, structure, and vigor. The composition and densities of tree, shrub, and herbaceous vegetation are variable and dynamic.

Management Direction for Range Resources		
Type	**Number**	**Direction Description**
Livestock and Allotment Management		
Goal	RA01	Manage grazing allotments to provide open areas for forage, wildlife habitat, visual diversity, and dispersed recreation.
Goal	RA02	Establish grazing capacities based on sound range inventory and analysis processes. Vary forage utilization between allotments based on grazing management systems in use, Management Prescription emphasis, and other factors, such as the dominant forage species.
Goal	RA03	Manage grazing disturbance at levels that support movement toward desired ground cover conditions and maintenance or restoration of inherent soil quality and function.
Standard	RA04	Allotment management plans (AMPs) shall be prepared and maintained on grazing allotments commensurate with the planned intensity of management. Design AMPs to maintain or improve vegetation, soil, and water resources. AMPs shall be coordinated with livestock production systems in use on adjacent lands to achieve balanced and sound management. Seek permittee involvement in the preparation of AMPs.
Guideline	RA05	Existing special use pasture permits may be converted to grazing permits where the land area can be managed as a grazing allotment.
Guideline	RA06	Newly acquired lands that are suitable for livestock grazing may be converted to grazing allotments.
Guideline	RA07	Additional areas for livestock grazing may be developed based on management prescription emphasis, land capability, cost effectiveness, resource condition, the needs of other resources, and the demand for forage and grazing levels.
Guideline	RA08	Open areas within allotments should be maintained for visual, wildlife, recreational, and forage purposes. Grazing should be one means of accomplishing this purpose and should be used where practical and efficient. Efficiency refers to a relative comparison of alternative means to keep the land in an open condition, not necessarily the efficiencies of the grazing operation.
Guideline	RA09	If water availability allows, rotational grazing should be encouraged to: a) Allow regrowth of the most desirable forage species, b) Avoid overuse of the most desirable areas, and c) Distribute use more evenly over the allotments.

Management Direction for Range Resources		
Type	**Number**	**Direction Description**
Guideline	RA10	Give preference for grazing opportunities to local, resident landowners. Use competitive bidding to select new permittees.
Range Improvements		
Goal	RA11	Maintain or improve existing range allotments by: a) Refining or implementing more appropriate grazing systems, b) Applying lime and fertilizer where needed, c) Seeding to improve vegetation quality, and/or d) Selectively controlling undesirable vegetation, such as brush or non-native invasive species.
Standard	RA12	Stream access points shall be selected for streambank and channel stability. Stabilization of the access points shall be accomplished if needed. When monitoring indicates that streambank stability is not being maintained, perennial or intermittent streams shall be fenced from livestock, and alternative crossings shall be designated.
Standard	RA13	A minimum 25-foot buffer strip shall be maintained between watercourses, both permanent and intermittent, and applications of lime or fertilizer.
Standard	RA14	Soil supplements may be added to grazing areas only after soil analysis or indicator plants demonstrate a need. Types and rates of application shall be determined through a soil analysis.
Standard	RA15	Corrals, loading chutes, water troughs, and other similar livestock facilities shall be located on well-drained ground and on soils that can withstand the degree of use planned. Gravel may be applied to harden or armor areas of heavy use.
Standard	RA16	Walk-through gates, stiles, or other devices shall be installed in fences that bisect system trails.
Standard	RA17	Hawthorn management shall be addressed in AMPs for allotments where hawthorn occurs, using Integrated Resource Management or other appropriate procedures. Hawthorn stands shall be inventoried within grazing allotments to establish baseline conditions for management planning and treatments.
Guideline	RA18	Bog, seep, or spring areas within or adjacent to allotments may be used to provide water to livestock watering facilities and should be protected by fencing.
Guideline	RA19	Favor introduction of legumes into pastures over nitrogen fertilizer application.
Guideline	RA20	Revegetation activities should use a variety of native species and maintain or improve vegetative diversity. Monoculture conditions should be avoided.
Guideline	RA21	Supplements (minerals, salt, etc.) should be provided in moveable feeders and used to improve livestock distribution and use over the allotment as needed.
See also Soil and Water Goal SW01, Fire Management Goal FM06, Vegetation Goals VE01 and VE19, Soil and Water Standards SW24 and SW41, Vegetation Standards VE13, VE22, VE23; TEP Species Standard TE34, Heritage Resources Standards HR05 and HR06, Soil and Water Guidelines SW56, SW57, and SW58; TEP Species Guideline TE82, Wildlife and Fish Guideline WF15, Heritage Resources Guideline HR12.		

Mineral and Geology Resources

Forest Service Manual direction for mineral management is in FSM 2800 - Minerals and Geology. Direction can also be found in 36 CFR 228, Subparts A through E.

DESIRED CONDITIONS

Exploration, development, and production of mineral and energy resources are conducted in an environmentally sound manner. Although some areas (designated wilderness, campgrounds, administrative sites, areas dedicated to recreation activities in a remote setting, and scenic areas, for example) are not available for exploration and development of federally owned minerals, most areas of the Forest remain available to mineral activities. Exploration and development of private mineral rights are consistent with deed terms and law, and make reasonable use of the land surface. Approved operating plans include appropriate mitigation measures. Operations are bonded commensurate with law or the costs of anticipated site reclamation. Sites are returned to a condition consistent with management emphasis and objectives.

Geologic processes, structure and materials are taken into account in the management of appropriate Forest resources. Geologic resources—including cave and karst features, springs and groundwater, ancient and recent landslides and debris flow, waterfalls, fossils and unique geologic features—are managed for public safety and to provide a balance between public enjoyment and protection of Forest resources.

Management Direction for Mineral and Geology Resources		
Type	**Number**	**Direction Description**
General Mineral Exploration and Development		
Goal	MG01	Make minerals available for exploration, development and production consistent with other appropriate uses and protection of the environment. Emphasize energy-producing minerals. Facilitate orderly and environmentally sound exploration, development, and production of mineral resources through standardized inspection, monitoring, and reporting requirements.
Goal	MG02	Emphasize appropriate mitigation and reclamation of environmental disturbance for all mineral exploration and development proposals. Reduce environmental effects from past mineral-related activity. Restore disturbed land to a productive condition.
Goal	MG03	Provide for reasonable access to and use of National Forest System (NFS) land surface for mineral activities. Allow for and support reasonable use of NFS land for the exercise of reserved and outstanding mineral rights consistent with deed terms and law.
Goal	MG04	Integrate mineral and geology project planning and implementation in a manner that is consistent with other resource management direction. Include collection and analysis of the appropriate geologic information as a part of Forest project planning and decision-making.
Objective	MG05	Inventory abandoned mines and prepare restoration plans to address biological and physical resource concerns, chemical stability, and human health and safety.
Objective	MG06	Keep 70 to 80 percent of federally owned oil and gas available for exploration, development and production.
Standard	MG07	Surface-disturbing exploration (including core drilling) is allowed except where prohibited by other Forest plan direction or as a result of site-specific analysis.
Standard	MG08	Site-specific mitigation measures shall be applied as needed to help protect other resources.

Management Direction for Mineral and Geology Resources		
Type	**Number**	**Direction Description**
Standard	MG09	Mineral exploration and development may be restricted to prevent unacceptable impacts to developed recreation sites, administrative sites, threatened and endangered species, or specially designated areas.
Standard	MG10	Applicants for private and federal mineral development proposals must submit an operating and rehabilitation plan for review.
Standard	MG11	Adequate sanitary, waste disposal and storage facilities must be provided during construction and operation to prevent possible contamination from human waste, oil, fuel, lubricants, and litter.
Standard	MG12	Mineral development and exploration near functioning stream channels shall comply with direction found in the Soil and Water section.
Standard	MG13	Roads no longer needed for operations shall be closed to vehicular traffic, unless other use is approved by the Forest. Bridges and culverts shall be removed if the road is not in the Forest Transportation System. Cross drains, dips, or waterbars shall be installed. In visually sensitive areas, the road surface shall be shaped to as near a natural contour as practicable and be stabilized.
Standard	MG14	Removal of timber on reserved and outstanding minerals is controlled by the deed. All other merchantable timber that must be cut for mineral development shall be marked by the Forest Service and sold to the operator at current market rates. All cut merchantable timber must be removed from NFS land or stockpiled in an area agreed upon by the Forest.
Standard	MG15	Reclamation shall include revegetating the site with native or desirable non-native, non-invasive species to control erosion and improve the visual quality of the site.
Standard	MG16	Waste rock, stumps, and soil shall be disposed of in approved locations.
Standard	MG17	The top 6 inches of soil shall be stockpiled and protected during the operation, and spread over the site as part of the revegetation and rehabilitation of the site.
Standard	MG18	The Forest Service has the responsibility to ensure that an archeological survey is made on sites where proposed mineral activity could affect cultural resources. If cultural resources are discovered, the operator shall assume the cost of evaluation and mitigation by a qualified archeologist. Archeologists conducting survey, evaluation, and/or mitigation for an operator must first secure a Special Use permit from the Forest Service.
Standard	MG19	When mineral developments are located within 500 feet of the boundary of a developed recreation area, seasonal restrictions shall be implemented to mitigate potential user safety hazards and user conflicts
Guideline	MG20	Mining sites should not be located on poorly drained soils as defined by the Soil Survey Report. If sites must be located on poorly drained soils, suitable mitigation measures should be instituted, and identified in the operating plan.
Guideline	MG21	The search for and development of mineral resources should be accomplished in a manner compatible with the resource values, environmental concerns, and management prescription for the area affected.
Guideline	MG22	The closure of National Forest System surface lands to land-disturbing mineral exploration or development should be based on Management Prescription direction or environmental analysis.
Guideline	MG23	Mineral activity areas should be secured against unauthorized visitors, using reasonable security measures such as gates and/or fencing. Signing and gating should be in accordance with the Manual of Uniform Traffic Control Devices.
Guideline	MG24	Mineral sites should avoid areas from which potable water supplies are being drawn. Intensive investigation may be required in limestone outcrop areas.

Management Direction for Mineral and Geology Resources		
Type	**Number**	**Direction Description**
Guideline	MG25	Unmerchantable slash created by road or site clearing within 100 feet of any road open to public vehicular traffic should be disposed of by lopping and scattering. Slash should not be piled and should lie within 3 feet of the ground. The Forest Supervisor may approve other uses for the slash. Sensitive view areas may require more intensive treatment of slash or treatment over a larger area.
Guideline	MG26	Use vegetative screening or structural design to visually blend project activities into the landscape.
Oil and Gas Leasing - Recreation		
Standard	MG27	Gas pipelines and gas well sites are not allowed within developed recreation areas.
Standard	MG28	Gas well sites are not allowed within 300 feet of a developed recreation area or Scenic Area.
Standard	MG29	No new gas/oil road construction is allowed within developed recreation areas. Road use by construction and gas drilling and development vehicles shall not be allowed during the primary recreation use season, which is determined for each developed recreation area.
Standard	MG30	Within 500 feet of the boundary of developed recreation areas or any designated Scenic Area, construction and gas drilling and development activities are not allowed during the primary recreation use season, which is determined for each developed recreation area. Routine and emergency maintenance of gas developments is allowed.
Standard	MG31	Construction, gas drilling, and development are not allowed within concentrated use areas designated by Forest Supervisor Order during the primary recreation use season, which is determined for each concentrated use area. Routine and emergency maintenance of gas developments is allowed.
Oil and Gas Leasing – Other Resources		
Standard	MG32	Gas well sites are not allowed in a wetland.
Standard	MG33	Pipelines are not generally allowed within a wetland. If a wetland cannot be avoided, pipeline construction may be allowed as long as the subsurface drainage patterns can be preserved and maintained. Any pipeline that crosses a wetland shall cross in a way that minimizes disturbance to the wetland.
Standard	MG34	Cave or groundwater contamination from gas or oil operations shall be avoided or mitigated.
Standard	MG35	Gas well sites are not allowed on administrative sites.
Standard	MG36	Within eligible river corridors with a Wild or Scenic classification, federal oil and gas leases may be issued only if subject to a stipulation that prohibits surface occupancy.
Oil and Gas Development		
Standard	MG37	Gas development activities shall not block or obliterate trails or campsites. These facilities shall be relocated to be at least 300 feet away from gas developments.
Standard	MG38	Drilling pits shall be located outside of channel buffers. Pits shall be obliterated after pit contents are removed.
Standard	MG39	Land application of drill pit liquids may be allowed, but only at Forest Service approved locations.
Standard	MG40	The pit liner shall only be left, and its solid contents encapsulated, with Forest approval.
Standard	MG41	Pipelines are allowed within channel buffers but shall be limited to essential crossings. Construction of pipelines running parallel to the stream shall be avoided.
Standard	MG42	No gas well sites are allowed within the buffer of any perennial water body. For all other (non-perennial) water bodies, every effort shall be made to locate gas well sites outside of the buffer. When circumstances make it impossible to keep the well site disturbed area outside of the buffer of non-perennial water bodies, special protection measures must be applied at the project level.
Standard	MG43	For well sites that have the potential to impact water quality, a plan that identifies emergency measures to prevent and contain accidental spills of contaminant must be prepared and submitted as part of the well drilling plan of operation.

Management Direction for Mineral and Geology Resources		
Type	**Number**	**Direction Description**
Coal Development		
Guideline	MG44	Favor lease proposals that are in conjunction with ongoing development of adjacent private coal.
Mineral Materials Development		
Standard	MG45	Surface-disturbing mineral materials operations under contract or permit shall be subject to: a) An approval of a plan of operations. b) Reasonable conditions as required to ensure proper protection of the environment and improvements. c) Timely reclamation of disturbed lands. Revisions of operating plans require similar approval.
Standard	MG46	An approved pit management plan is required for community pits and continuous use administrative pits.
Standard	MG47	Minerals shall not be sold at less than the appraised value. The Forest is responsible for appraising mineral materials.
Standard	MG48	Personal use mineral permits shall not authorize removal of material within stream channels or their banks, or within suitable Cheat Mountain salamander habitat or occupied TEP plant species habitat.
See also Soil and Water Goal SW01, Soil and Water Standards SW03, SW04, SW43; Vegetation Standards VE13, VE22, VE23; TEP Standards TE06, TE18, TE19, TE20, TE33, TE39, TE46, TE47, TE49, TE50, TE52, TE53, TE58, TE59 TE66 TE67 TE71; Recreation Standard RC28, Heritage Resources Standards HR05, HR06, HR09; Roads and Facilities Standard RF04, Soil and Water Guidelines SW11, SW15, SW16, SW19, SW59; TEP Species Guideline TE77, Heritage Resources Guideline HR12, Lands and Special Uses Guideline LS33.		

Natural Gas Well Site

Lands and Special Uses

Forest Service Manual and Handbook management direction for the Lands program and non-recreation special uses is in FSM 2700 - Special Uses Management, FSM 5400 - Landownership, FSM 5500 - Landownership Title Management, FSM 7150 - Surveying, and FSM 7700 - Transportation System, and in FSH 2709.11 - Special Uses, FSH 2709.12 - Road Rights-of-Way Grants, FSH 2709.15 - Hydroelectric, FSH 5409.12 - Appraisal, FSH 5409.13 - Land Acquisition, FSH 5409.17 - Rights-of-Way Acquisition, and FSH 5509.11 - Title Claims, Sales, and Grants. See also the Recreation Resources section in this Chapter for additional direction for recreation special uses.

DESIRED CONDITIONS

Public lands are managed for public benefit consistent with their primary purposes, and to prevent dissipation of their productive capacity over the short and long term.

The Lands Program manages the real property interests of the National Forest by protecting, managing and adjusting the publicly owned rights, title, and interest in the lands collectively known as the National Forest System (NFS).

The landownership status system is maintained to reflect accurate records of interests, including rights and reservations in lands, and is the starting point for all management actions taken on Forest units. It is regularly updated to reflect constant changes in landownership status information. It is regularly referred to by resource specialists and provides the basis for land management planning and programming of work by defining the boundaries, encumbrances, special uses, access, and ownership patterns that more clearly identify costs, overall needs, and opportunities for future management actions.

Consolidation of landownership is aimed at reducing management costs, reducing miles of landlines necessary to survey and maintain, reducing numbers of rights-of-way needed to access public lands, consolidating transportation systems, and providing more efficient fire protection.

A variety of tools are used to change interests in lands to provide more efficient and cost-effective administration. Land adjustments reflect Forest priorities for acquisition and conveyance. Landownership adjustments reduce limitations posed by private lands, rights, or authorizations. They provide public access to NFS lands that are isolated. Managers allow adequate time to accommodate needed adjustments prior to proposed management activities.

Proposed private uses of NFS lands are generally met on private lands. Conflicts between authorized special uses and other uses and resources are mitigated or eliminated.

Title claims and encroachments are acted on. Trespasses are investigated and offenders prosecuted.

Coordination with other federal, state, county, and local agencies, and affected individuals and interest groups is initiated to ensure awareness, involvement, and actions that benefit the public interest.

National Forest property boundaries and corners are located on the ground, monumented, marked, and posted to properly identify lands managed by the Forest. Pro-active efforts to mark and maintain property boundaries and educate and inform users and adjacent landowners result in reduced levels of unauthorized uses, encroachments, and user conflicts. Boundaries and corners are maintained to Forest Service standards to prevent their loss over time to damage and neglect. Well-established property lines support enforcement of Forest Service regulations.

Management Direction for Lands and Special Uses		
Type	**Number**	**Direction Description**
Landownership Adjustments		
Goal	LS01	Identify and seek adjustments to land ownership, National Forest boundaries, and partial interests to effectively meet public needs, to protect and enhance important resources, to consolidate NFS land, and to improve management efficiency.
Guideline	LS02	Normally, condemnation should not be used to acquire an interest in land that the owner is not willing to sell. However, when an owner refuses to sell a needed interest in property, the Forest Supervisor may request condemnation action from the Secretary of Agriculture to clear defective title or to acquire high-priority property or rights-of-way needed for specific development programs.
Guideline	LS03	Scenic easements may be obtained in lieu of fee acquisitions when practical and where management objectives are compatible. Generally scenic easements should serve some special area that is of exceptional value for outdoor recreation or critical habitat.
Guideline	LS04	Federal land conveyances by exchange or other specific authority should be guided by the following criteria (not listed in any order of priority): a) Lands inside or adjacent to communities or intensively developed private land, and chiefly valuable for non-National Forest System purposes. Lands that support community expansion. b) Parcels that will serve a greater public need in state, county, city, or other federal agency ownership. c) Inaccessible parcels isolated from other NFS lands. Parcels intermingled with private lands. d) Parcels under long-term special use permits whose use and purpose are not substantially consistent with National Forest purposes and character. e) Parcels having boundaries, or portions of boundaries, with inefficient configurations (projecting necks or long, narrow strips of land, etc.) Lands that support more logical and efficient management. f) Parcels eligible for disposition under the Small Tracts Act or other statutory authorities. g) Lands that do not have TEP or RFSS species habitat, wetlands, rare communities, or other outstanding resource values. Exchanges should be advantageous to both parties. Avoid encumbering lands identified for exchange with uses that compromise land exchange opportunities.

Management Direction for Lands and Special Uses		
Type	**Number**	**Direction Description**
Guideline	LS05	Acquisitions of land and interests in lands should be guided by the following criteria: a) Lands with water frontage such as lakes, rivers, and streams. b) Lands needed for protection of TEP fish, wildlife, or plant species. c) Other environmentally sensitive lands, such as important wetland and riparian areas and cave resources. d) Lands needed for protection of significant historical or cultural resources when these resources are threatened or when management may be enhanced by public ownership. e) Lands that enhance recreation opportunities, public access, and protection of aesthetic values. f) Lands needed for protection and management of administrative and congressionally designated areas. g) Lands needed to obtain more efficient land ownership patterns and reduce expenses of both the Forest Service and the public in administration and utilization. h) Lands with water rights or resources that can be used to accomplish management objectives or related resource obligations. i) Major corporate parcels that become available. j) Lands or partial interests needed to reunite or consolidate split estates. k) Lands or partial interests needed to achieve the objectives of public law or regulation. l) Lands needed to protect resource values by eliminating or reducing fire risks, soil erosion, or occupancy trespass. Other acquisitions may be considered that promote more effective Forest management or benefit the priority acquisitions listed above.
Rights-of-Way		
Goal	LS06	Acquire, grant, and/or exchange for legal access to meet the needs of planned resource management activities and public and administrative access.
Standard	LS07	Easement acquisition shall conform to right-of-way planning and shall include existing Forest Transportation System roads and trails as well as project-related new construction.
Guideline	LS08	Rights-of-way for county roads, state highways, and major utility improvements should be conveyed when such conveyances are in the long-term interest of the Forest and the public.
Guideline	LS09	Where feasible, exchange of easements, co-op agreements, and cost-share supplements should be considered as alternatives to purchase of rights-of-way.
Guideline	LS10	Rights-of-way should be acquired at least one year prior to placing timber sale related or other activity Performance Accomplishment Reporting targets on annual Programs of Work if the accomplishments are dependent on the rights-of-way acquisition.
Boundaries		
Goal	LS11	Maintain boundary lines between NFS lands and other ownerships that have been surveyed, posted, and marked to keep them visible, to protect the investment, and to deter encroachment.
Goal	LS12	Identify and resolve trespass uses, title claims, and encroachment occurring on NFS lands, and act to reduce the likelihood of future trespass.
Standard	LS13	Locate and post NFS land boundaries before implementing management activities near or adjacent to lands not under Forest Service management.
Standard	LS14	Locate and post wilderness boundaries before implementing management activities that may conflict with nearby designated wilderness.
Standard	LS15	Include protection measures for marked property boundaries and corners in authorizations, contracts, agreements, plans of operations, and internal management activities where the potential for disturbing property markers exists. Damage to or loss of marked property boundaries or corners shall be repaired by the appropriate party or management function.

Management Direction for Lands and Special Uses		
Type	**Number**	**Direction Description**
Guideline	LS16	Ownership boundary lines should be surveyed, marked, and posted according to the following priorities: a) Where known litigation is pending or a title claim has been asserted. b) Where significant resource values exist and utilization or manipulation of these resources are planned. c) Where encroachment activity by adjoining owners is suspected or known to exist or may occur in the near future. d) Where there is high risk for potential or planned outside development adjacent to NFS lands. e) All remaining property lines.
Special Uses		
Goal	LS17	Proposed special uses of NFS lands—such as hydroelectric development, wind energy development, communication sites, water developments, and utility corridors—are considered that meet public needs, are consistent with direction for other Forest resources and management prescriptions, and cannot be accommodated off the National Forest.
Goal	LS18	Special use authorizations are issued for uses that: a) Serve the public, b) Promote public health and safety, c) Protect the environment, and/or d) Are legally mandated.
Goal	LS19	Work with utilities and others to minimize the use of NFS lands for utility corridors, and to share existing corridors when feasible.
Goal	LS20	During watershed or project-level analysis, identify existing or proposed special uses that may contribute to resource degradation, and implement measures to mitigate or eliminate effects where feasible.
Goal	LS21	Phase out existing special uses that are not compatible with management objectives.
Standard	LS22	Recreation residence Special Use permits shall not be approved.
Standard	LS23	Special use permits shall not be issued for the sale or disposal/removal of topsoil.
Standard	LS24	Require adequate bonds or other security instruments for special-use authorizations if the use has potential for disturbance that may require rehabilitation or when needed to ensure other performance.
Standard	LS25	Proposals for utility and communication facilities outside existing sites or corridors shall be considered only after improvement or expansion of existing facilities is determined to be inadequate or impractical.
Standard	LS26	Permittees who operate facilities on NFS lands shall meet the same environmental standards as those applied to Forest Service facilities.
Guideline	LS27	Formation of user associations are preferred to individual special-use permits and rights-of-way in common use facilities, uses, or areas. Multiple permits to the same organization should be incorporated into one permit if this facilitates permit administration.
Guideline	LS28	Modifications of existing authorizations should be prioritized based on the current and potential negative effects on human health and safety and resource values.
Guideline	LS29	Access to authorized improvements for maintenance needs should be addressed as part of Special Use authorizations. Where appropriate access is not addressed in existing authorizations, the authorizations should be amended to include it.
Guideline	LS30	Utility corridor widths may be expanded beyond the minimum to achieve scenery and wildlife objectives.
Guideline	LS31	New power lines, less than 34.5 KV, and telephone lines should be placed underground, unless analysis indicates this is not in the public interest, will cause excessive disturbance to other resources, or is impractical due to rocky or other prohibitive conditions.

Management Direction for Lands and Special Uses		
Type	**Number**	**Direction Description**
Guideline	LS32	Where feasible, special use rights-of-way on NFS lands should provide wildlife food and cover plants. Vegetation on rights-of-way may be selectively maintained to benefit wildlife and species diversity. The use or unintentional introduction of non-native invasive species should be aggressively avoided.
Guideline	LS33	Fill, consisting of soil and rock materials (not including topsoil) should normally not be sold, disposed of, or removed from NFS lands, unless it is in the public interest. When circumstances warrant, however, fill may be sold or otherwise distributed under a minerals permit.
Guideline	LS34	Commercial service developments and occupancy under permit may continue when in agreement with area objectives. New commercial development should not occur on NFS lands, unless the use of that land is necessary to provide high quality public services that are compatible with the area's objectives.
Guideline	LS35	Authorization holders may be required to post a bond to cover future project costs of road decommissioning associated with new structures such as dams, towers, and large buildings.
Guideline	LS36	Negative effects of special use practices or facilities should be mitigated, where feasible, through measures such as changes in management strategy or practices, discontinuance, relocation, closure, or alteration.
See also Vegetation Goal VE15, Scenery Goal SM01, Vegetation Standards VE13, VE22, VE25, VE26; Soil and Water Standard SW34, TEP Species Standards TE16, TE36, TE45, TE63; Recreation Standard RC28, Heritage Resources Standards HR05 and HR06, Minerals Standard MG18, Roads and Facilities Standards RF04 and RF28, Soil and Water Guideline SW61, Vegetation Guideline VE21, Scenery Guideline SM07, Heritage Resources Guideline HR12, Range Guideline RA07.		

Spruce Knob Communication Site

Roads and Facilities

Forest Service Manual and Handbook management direction for facilities and roads is in FSM 5460 - Right-of-Way Acquisition, FSM 7100 - Engineering Operations, FSM 7300 - Buildings and Other Structures, FSM 7400 - Public Health and Pollution Control Facilities, FSM 7500 - Water Storage and Transmission, FSM 7600 - Electrical Engineering, andFSM 7700 - Transportation System; FSH 5409.17 - Rights-of-Way Acquisition, FSH 7309.11 - Buildings and Related Facilities, FSH 7409.11 - Sanitary Engineering and Public Health, FSH 7509.11 - Dams Management, FSH 7709.55 - Transportation Planning, FSH 7709.56 - Road Preconstruction, FSH 7709.56b - Transportation Structures, FSH 7709.57 - Road Construction, FSH 7709.58 - Transportation System Maintenance, and FSH 7709.59 - Transportation System Operations.

DESIRED CONDITIONS

The road network matches the level of management activities occurring on the Forest and supplies the transportation system needed for recreation, special uses, timber harvest, range management, minerals development, fire protection, and other resource management needs. The transportation network is managed, using a variety of tools, to reduce adverse effects to resources. Roads needed for long-term objectives are maintained to provide for user safety and resource protection. Roads not needed for long-term objectives are decommissioned and stabilized.

Facilities are developed to the standard adequate for their intended purpose. Reconstruction and remodeling of existing facilities, and construction of new facilities, occur as facilities wear out or need to change. Facilities are safe, efficient, and meet land and resource management objectives.

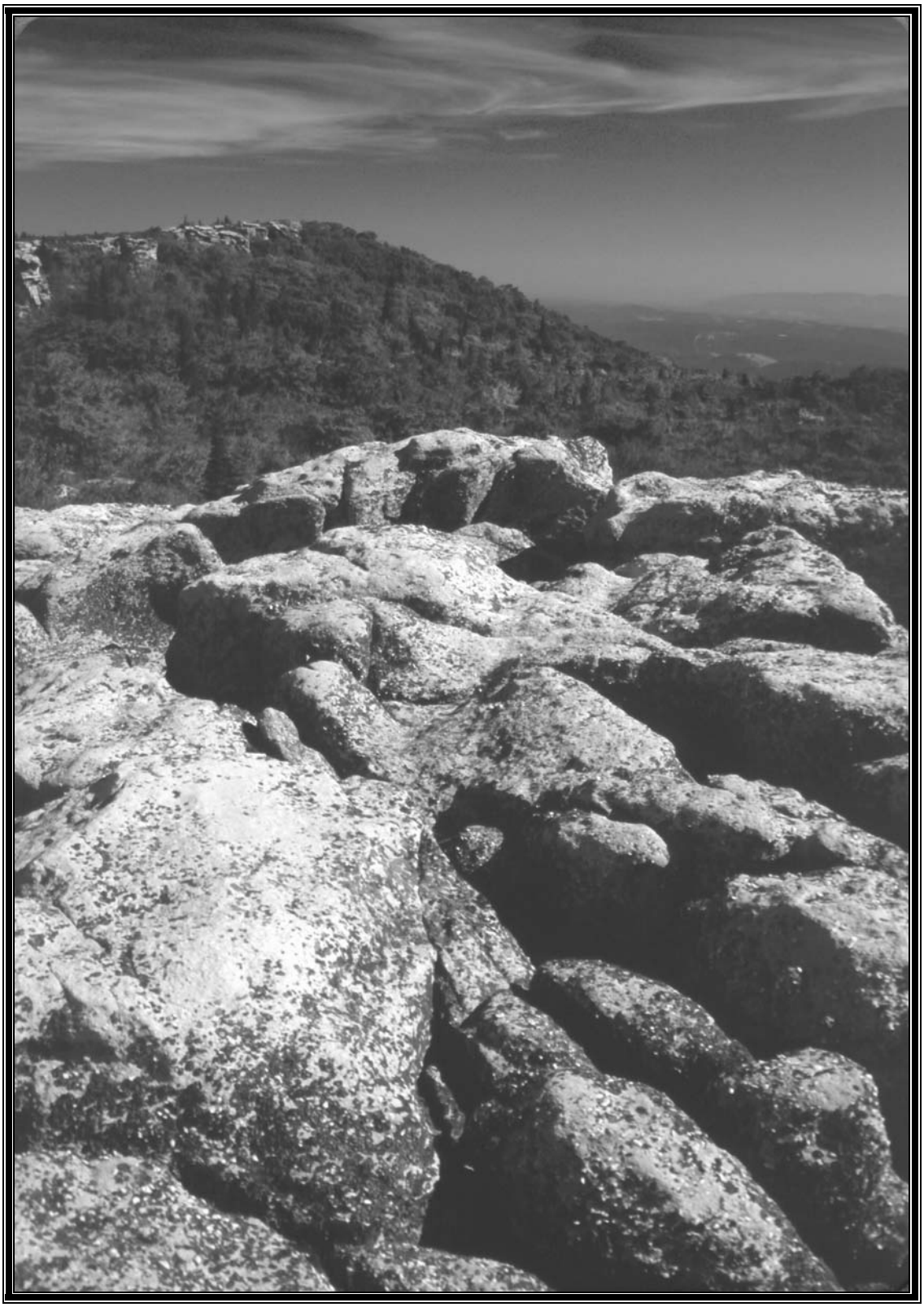
Management Direction For Roads and Facilities		
Type	**Number**	**Management Direction Description**
Transportation Planning and Development		
Goal	RF01	Provide a transportation system that is safe, cost efficient, meets access needs, and minimizes adverse impacts to natural resources.
Goal	RF02	Provide developed roads to the density and maintenance level needed to meet resource and use objectives. During watershed or project-level planning: a) Update inventory of area transportation system. b) Determine the minimum transportation system necessary to achieve access management objectives. c) Incorporate cost efficiency into construction, reconstruction and maintenance needs. d) Identify roads to decommission, obliterate, replace, or improve that are causing resource damage. e) Integrate needs for off-road parking.
Objective	RF03	Over the next decade, decommission or reclaim at least 30 miles of roads that are no longer needed for achieving access management objectives. These can include system roads and old woods roads. Actions may range from full obliteration to administratively removing a road from the transportation system as long as it poses no resource impacts without additional rehabilitation efforts.

Management Direction For Roads and Facilities		
Type	**Number**	**Management Direction Description**
Standard	RF04	Roads shall be constructed to the standard appropriate to their intended use, considering safety and other resource concerns.
Standard	RF05	Cooperators or permittees may be allowed to locate, design, and build special purpose roads on NFS lands (i.e., mineral access or special land uses). The Forest shall review all such locations and designs, and approve them where appropriate. Location and standards shall be coordinated with the needs for management and for protection of other resources.
Standard	RF06	New road construction shall avoid wetlands where feasible. If a wetland cannot be avoided, road construction may be allowed as long as the subsurface drainage patterns can be preserved and maintained. Any road that would cross a wetland shall cross in a way that minimizes disturbance to the wetland.
Standard	RF07	Where new roads cross streams or high-risk areas, disturbed soils shall be stabilized and designed drainage structures shall be installed as soon as practical. High-risk areas include landslide prone areas, steep slopes, and highly erosive soils.
Guideline	RF08	In support of road management decisions, use an interdisciplinary science-based roads analysis process such as Roads Analysis: Informing Decisions About Managing the National Forest Transportation System (USDA FS, 1999 Report FS-643).
Guideline	RF09	Evaluate existing routes during transportation planning to determine whether they should be retained, reconstructed, replaced, or decommissioned. Evaluate transportation needs based on existing uses and condition, the access needs of cooperators, permittees, and private landowners, environmental and economic impacts, and compatibility with management prescriptions. Coordinate evaluation with information in the Roads Analysis Report for the Monongahela National Forest (January 2003) or updated versions.
Guideline	RF10	During watershed or project-level analysis, opportunities for road decommissioning should be identified and prioritized based on: a) Hazard assessments in the Roads Analysis Report for the Monongahela National Forest (January 2003) or updated versions b) Identified needs in drainages with 303(d) impaired water bodies c) The access needs of cooperators, permittees, and private landowners d) Prescription units that exceed road density standards for the management prescription e) Other site-specific concerns identified in the watershed or project analyses.
Guideline	RF11	The process to determine road maintenance levels should evaluate the purpose of the road, the type of vehicles expected, the duration and frequency of use, and necessary environmental protection measures.
Guideline	RF12	Roads that are no longer needed for access or management should be decomissioned. Evaluate long-term access needs and potential trail conversion or linear wildlife opening opportunities prior to making a decision to decommission a road.
Guideline	RF13	Road decomissioning should include the following: a) Road should be physically blocked to prevent vehicle use, unless designated for use by trail vehicles. b) Drainage structures should be removed and natural drainage re-established, unless needed for use by trail vehicles. c) The road profile should not normally be returned to contour during decommisioning, but recontouring may occur to meet special environmental or visual needs. d) Exposed soils should be revegetated and natural plant succession should be allowed to occur, unless needed for trail purposes. e) Decommissioning should normally be accomplished in conjunction with other project work but may occur independently if funding is available.
Guideline	RF14	Temporary roads may be constructed and used to provide for short-term management access needs.
Standard	RF15	Temporary roads shall be rehabilitated and returned to productivity following their use.

Management Direction For Roads and Facilities		
Type	**Number**	**Management Direction Description**
Guideline	RF16	Work with intermingled and adjacent landowners and local governments to develop roads or road systems that serve the needs of all parties.
Transportation System Operation		
Goal	RF17	Maintain Forest system roads in accordance with the Maintenance Management System to best meet management objectives within available funding.
Goal	RF18	Continue to develop Forest information on road and trail access, and update as needed.
Standard	RF19	Public motorized vehicle use is allowed on roads and trails designated open for use. Off road or trail use is not allowed. Off road motor vehicle travel restrictions do not apply to: 1) military, fire, emergency, law enforcement or administrative vehicles when used for official or emergency purposes, and 2) other vehicle use allowed by written authorization from the Forest Supervisor or District Ranger.
Guideline	RF20	Vehicle use on closed roads by permittees, contractors, or other cooperators may be authorized to conduct official business or to perform resource management activities.
Guideline	RF21	The Forest may allow others to plow snow on Forest System roads if the plowing follows Forest Service Engineering Specifications.
Guideline	RF22	Use the Forest Motor Vehicle Use Map to identify whether a National Forest System road or trail is open, restricted, or closed to motor vehicle use.
Guideline	RF23	Seasonal or year-round road closures may be used to: a) Reduce road maintenance costs. b) Minimize user conflicts. c) Provide for recreation activities. d) Enhance wildlife habitat. e) Reduce road use impacts to other resources. f) Address public safety.
Guideline	RF24	Road and trail management direction should be reviewed on a case-by-case basis as public issues or management concerns are identified for a specific road or trail. District Rangers should prepare an environmental analysis addressing issues and concerns to determine if a change in management direction is needed.
Guideline	RF25	Information should be made available to the public to communicate specific management decisions about public motor vehicle use on Forest system roads and trails.
Facilities		
Goal	RF26	Provide and maintain safe and efficient Forest facilities that meet resource management and public service needs.
Goal	RF27	Manage the Forest telecommunication system and related facilities in accordance with the Forest Communication Plan and established national telecommunication standards.
Goal	RF28	Identify facilities that are not needed and evaluate for disposal or decommissioning.
Standard	RF29	Ensure that potable water provided at any public or administrative facility is safe to drink.
Guideline	RF30	Building and structure architectural designs should follow principles and concepts outlined in the Built Environment Image Guide (BEIG) or other appropriate guide.
Highland Scenic Highway		
Standard	RF31	Commercial traffic may only be allowed on the Parkway portion of the Highland Scenic Highway by written permission under one of the following conditions: a) The proposed use is advantageous for reasons of public safety, environmental protection, or resource management objectives. b) The proposed use is related to the construction, maintenance, or management of the Parkway, associated facilities, or the highway corridor. c) The proposed user has a legal right of access through deed, easement, or permit.
Guideline	RF32	Related recreation facilities and visual enhancement projects should be included in Highland Scenic Highway plans and projects.

Management Direction For Roads and Facilities		
Type	**Number**	**Management Direction Description**
See also Soil and Water Goals SW32 and SW33, Recreation Goals RC01, RC05, RC07, RC11, RC12; Lands and Special Uses Goal LS06, Recreation Objective RC13, Soil and Water Standards SW04, SW34, SW35, SW36, SW37, SW44, SW45, SW46; Vegetation Standards VE13, VE2, VE22; TEP Standards TE21, TE51, TE56, TE67, TE71; Recreation Standards RC18, RC20, RC28; Heritage Resources Standards HR05, HR06, HR09; Timber Standard TR08, Minerals Standards MG09, MG13, MG35; Lands and Special Uses Standard LS07, Soil and Water Guidelines SW11, SW14, SW19, SW51, SW60, SW62; TEP Species Guidelines TE74, TE76, TE77, TE81, TE83; Wildlife and Fish Guidelines WF17, WF19, WF20; Recreation Guidelines RC29 and RC31; Scenery Guidelines SM02, SM03, SM05; Heritage Resources Guideline HR12, Timber Guidelines TR10, TR11, TR17, TR18; Lands and Special Uses Guidelines LS07, LS08, LS09, SL10, LS28, LS37.		

Forest Road – Maintenance Level 4



Dolly Sods Scenic Area

Chapter III

Management Prescriptions

Table of Contents

Page No.

Introduction III-1

Management Prescription 3.0 - Vegetation Diversity III-4

Management Prescription 4.1 - Spruce and Spruce-Hardwood Ecosystem Management III-9

Management Prescription 5.0 – Designated Wilderness III-17

Management Prescription 5.1 - Recommended Wilderness III-25

Management Prescription 6.1 - Wildlife Habitat Emphasis III-31

Management Prescription 6.2 – Backcountry Recreation III-40

Management Prescription 8 – Special Areas III-46
- Management Prescription 8.1 - Spruce Knob-Seneca Rocks NRA III-52
- Management Prescription 8.2 – National Natural Landmarks III-58
- Management Prescription 8.3 – Scenic Areas III-59
- Management Prescription 8.4 – Botanical and Geological Areas III-61
- Management Prescription 8.5 – Research Areas III-63
- Management Prescription 8.6 – Grouse Management Areas III-66

Changes to Chapter III Between the Proposed and Final Plans

Introduction – We added a section to clarify how we intend to manage the development features (roads, pipeline corridors, etc.) that form the boundaries of undeveloped areas.

Management Prescriptions – Area description numbers were updated for all MPs due to the minor shifts in MP allocations from Alternative 2 to Alternative 2 Modified.

MP 4.1 – In response to comments, we changed the name of this prescription to "Spruce and Spruce-Hardwood Ecosystem Management". We updated vegetation management objectives.

MP 5.0 – In response to comments, we made a number of minor editorial, clarification, or consistency changes to all sections of this MP. We deleted Standard 5020 as the concern was already covered under direction for Vegetation. We deleted Guideline 5045 as it appeared to conflict with Forest Service Manual direction. We added direction to Transportation System Planning for clarification and consistency.

MP 5.1 - In response to comments, we made a number of minor editorial, consistency, or clarification changes to all sections of this MP. We deleted Standard 5008 as the concern was already covered under Standard 5010. We added a Wildlife Management guideline to clarify that maintenance of existing improvements may continue. We deleted Standard 5127 because it seemed to imply that we control fish stocking. We moved Standard 5138 to Forest-wide direction. We added direction to Vegetation, Fire, and Transportation System Planning for clarification and consistency.

MP 6.1 – In response to comments, we added information and direction to clarify our management intent in mixed pine-oak stands. We added a desired condition table for general forest types for consistency. We updated Vegetation management objectives and added an objective for Indiana bat habitat management. We deleted the prescribed fire objective 6144 because this concern was better addressed in the Forest-wide management direction.

MP 6.2 - In response to comments, we made a number of minor editorial, consistency, or clarification changes to all sections of this MP. We added three areas to this MP. We moved Standard 6232 to Forest-wide direction. We added direction to Vegetation, Fire, and Transportation System Planning for clarification and consistency.

MP 8.0 - In response to comments, we made a number of minor editorial, consistency, or clarification changes to all sections of this MP. We rearranged MPs 8.1 through 8.6 so they are now in sequence. We added an 8.0 guideline to clarify Vegetation management related to NNIS, insects, and pathogens. We added a map for MP 8.1 (NRA) and direction to clarify management intent within 8.1 SPNM areas. We changed the numbering for all 8.2 direction for consistency. We deleted Standards 8281, 8415, and 8452 as they were not needed. We added direction for the 8.5 Pike Knob candidate RNA. We added the Loop Road Research Area in with the 8.5 Fernow Experimental Forest.

INTRODUCTION

To provide more effective and efficient management, the Forest has been divided into smaller units called Management Prescriptions (MPs), each of which is organized around a common management emphasis. The MPs are shown on the map for Alternative 2M in the map packet that accompanies the 2006 Plan and FEIS. This section describes each of these areas in detail, highlights resource areas of importance within each area, and prescribes specific management direction to address items that were not covered, or covered more generally, in the Forest-wide direction. The MPs for the 2006 Forest Plan are:

MP 3.0 – Vegetation Diversity
MP 4.1 – Spruce and Spruce-Hardwood Ecosystem Management
MP 5.0 – Designated Wilderness
MP 5.1 – Recommended Wilderness
MP 6.1 – Wildlife Habitat Emphasis
MP 6.2 – Backcountry Recreation
MP 8.0 – Special Areas

This introduction is a user's guide for the MP area descriptions and direction that follow. The MPs describe management emphasis, current resource conditions, desired conditions, goals, objectives, standards, and guidelines for resource programs within each area. Program areas are organized similar to Forest-wide direction, by Forest Service Manual/Handbook number. Each MP area is divided into the four separate but connected subsections described below.

Management Emphasis

This is a brief statement describing what resources, settings, or activities that the MP is designed to emphasize. The management emphasis is typically expressed in bullet statements, with the level of importance or priority generally flowing from top to bottom.

Area Description

The area description summarizes the current conditions for important features and resources within each area. The purpose of this description is to familiarize the reader with the area and its characteristics and concerns. This information also helps set the stage for management direction that follows. Information in the area description typically includes:

- Overall size of the area and percentage of the Forest
- Current vegetation conditions by forest type and successional stage
- Fire regime and Condition Class data
- Miles of roads and trails, and average open road densities
- Recreational settings and opportunities
- Past or ongoing timber, range, and mineral activities or operations
- Electronic or communication facilities
- Impaired water bodies and eligible Wild and Scenic River segments

Desired Conditions

Desired conditions describe how the Forest would like to see the area look and function over time. They represent the desired result of following the management emphasis and direction for each area. They are written in the present tense to give the reader a better idea of what the areas should look like and provide once the desired conditions are achieved.

Management Direction

MP direction is designed to tier to Forest-wide direction, and to meet Forest-wide goals and desired conditions. MP direction, though, is generally intended to be more specific than Forest-wide direction, addressing specific elements or concerns related to each program area. In some cases, a program area may not have any additional direction at the MP level beyond that already provided at the Forest-wide level.

MPs use the same types of direction—goals, objectives, standards, and guidelines—that are defined in the Introduction to Chapter 2. Time frames for achieving MP objectives are essentially the same as for Forest-wide objectives—10 to 15 years (the planning period) unless otherwise stated. More specific time frames are not typically used because accomplishment can be delayed by funding, litigation, environmental changes, and other influences beyond the Forest's control.

Standards and guidelines appear in MPs to provide more explicit protection or guidance than can be provided through Forest-wide direction. This more explicit direction is based on the site-specific needs or concerns of the area. Put another way, Forest-wide standards and guidelines generally apply to all MPs on the Forest; however, this direction may be refined or expanded at the MP level to address specific concerns unique or specific to that MP.

Management Prescription Area Boundaries

Where developmental features—such as roads, pipelines, or transmission lines—are used as the boundaries for MP areas, these features are not considered to be within the areas, nor are they subject to the management direction associated with the MP areas. These features are managed under Forest-wide direction for Roads and Facilities, or Special Uses.

Emphasis Versus Actual Management

Management Prescriptions (MPs) were assigned to National Forest System lands based roughly on descriptions that the Forest Service has developed at the national level. The MPs represent management emphasis themes, ranging from areas with little or no development, such as Designated Wilderness (5.0) or Recommended Wilderness (5.1), to areas where a relatively high degree of development may be expected over time, such as Age Class Diversity (3.0).

It is important to note, however, that not every acre of every prescription area may reflect the MP emphasis. For instance, some prescription areas are intersected by administrative boundaries that have specific management requirements that may or may not match the overall MP. Eligible

Wild and Scenic River corridors are examples of these administrative areas. These areas would be managed according to their classification standards, as described in the Wild and Scenic River Act, regardless of what MP that surrounds them.

Riparian areas within channel or wetland buffers would also receive special management consideration, regardless of the surrounding MP. These considerations are described in the Forest-wide management direction of the 2006 Forest Plan.

Additionally, there are many smaller administrative units, with or without official designation, which may have management requirements that are somewhat different than the overall management emphasis of the MP. Examples of these units include developed administrative sites, recreation sites, designated utility corridors or communication sites, mines, and cultural or historical sites.

For instance, a campground would be managed as a campground, regardless of the MP in which it is located. Mineral development opportunities are determined to a large extent by mining legislation and deed terms. However, the amount or timing of operations for federally leased minerals could be influenced by specific MP management direction.

Special uses are authorized by permit, and thus MPs would not have much effect on existing uses. However, MPs could influence whether certain permits in some areas are renewed, or influence the likelihood of allowing certain types of new special uses in those areas.

Most cultural and historic sites are protected, particularly if they are eligible for or listed on the National Register of Historic Places. MP assignments would not affect these sites, but they could affect the settings around, or access to, these sites.

Individual MPs are presented below.

Management Prescription 3.0 – Vegetation Diversity

Management Emphasis

This prescription emphasizes the following:

- Age class diversity and sustainable timber production.
- A variety of forest scenery.
- Habitat for wildlife species tolerant of disturbances, such as deer, grouse, and squirrel.
- A primarily motorized recreation environment.

Area Description

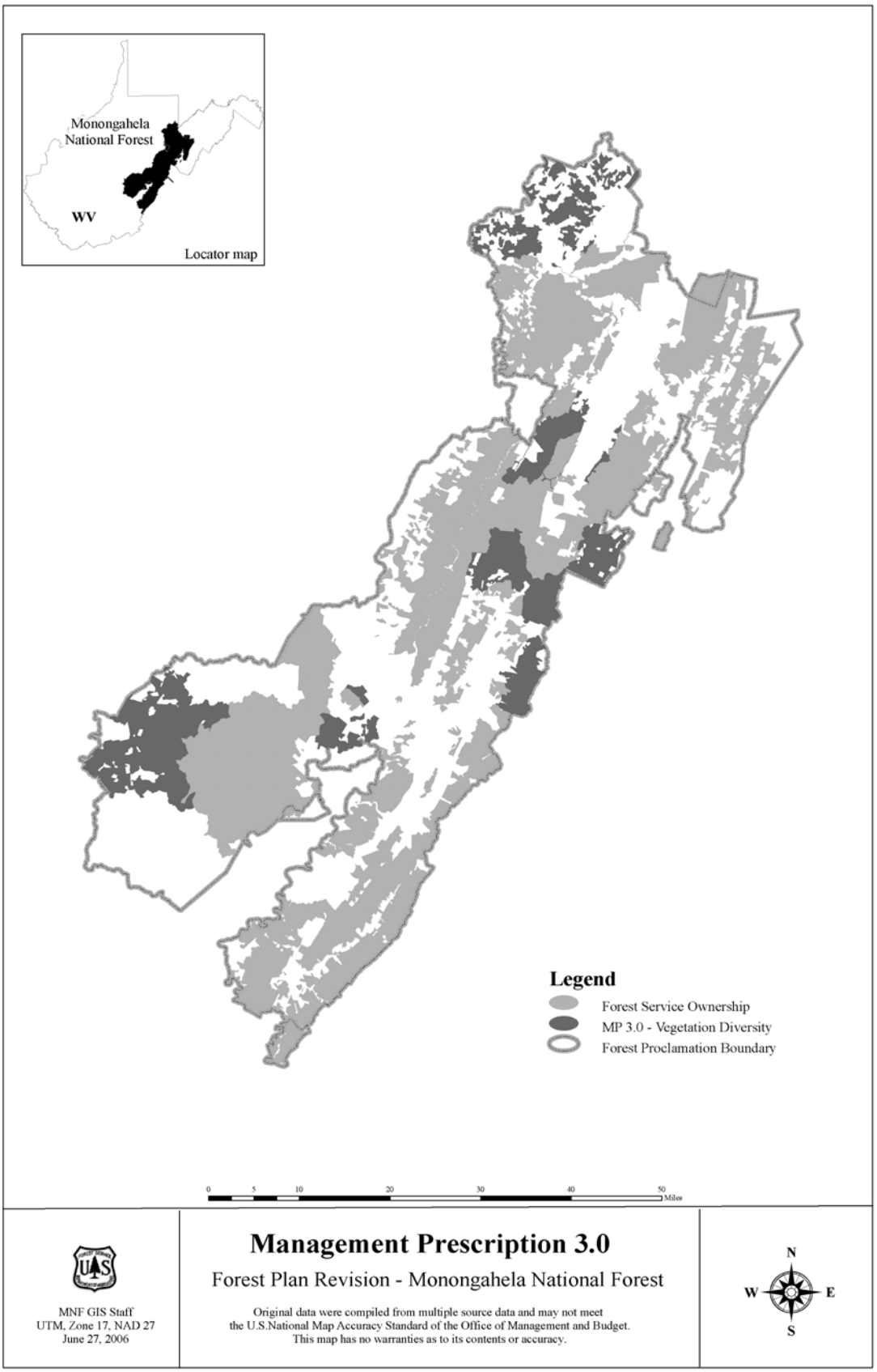
Lands assigned to this prescription comprise a total of 194,600 acres, or 21.2% of the entire Forest (see MP 3.0 map). The size of each prescription area varies widely. Elevations range from under 2,000 to over 4,000 feet, and areas occur on a wide variety of land and soil types. The major forest communities and their current age classes are depicted in the table below. An estimated 5,500 acres (3% of the MP) are also maintained and managed as wildlife openings.

Current Vegetation Conditions in Management Prescription 3.0						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	0.8	5.6	4.4	32.8	50.7	6.5
Northern Hardwoods	11.0	4.1	3.2	31.6	59.2	1.9
Mixed Cove Hardwoods	62.6	4.2	5.6	33.5	54.8	1.8
Mixed Oak	22.4	4.1	1.6	31.4	52.8	10.1
Pine-Oak	0.6	3.0	9.9	63.9	18.7	4.6

Because this prescription covers such a large expanse of land and diversity of landforms and vegetation types, most species and habitats of wildlife, fish, and plants on the Forest are represented within it. For these same reasons, a wide variety of rare flora and fauna, and non-native invasive species are also found within this prescription. There are 15 range allotments located in the area, comprising an estimated 2,233 acres.

An estimated 4,000 acres (2%) of the prescription area are considered to be in Fire Regime 1, Condition Class 3, and 36,200 acres (18%) in Fire Regime III, Condition Class 2. These acres represent the best opportunity to use prescribed fire and timber management to reduce fuels and restore natural habitat structure and stand density, species composition, and disturbance regimes.

There are an estimated 177 miles of Forest System Level 3, 4, and 5 roads in this prescription, creating an average open road density of 0.6 miles per square mile. An estimated 34,000 acres of timber harvest activity have occurred within this prescription since 1986, about 70-75% of which have been intermediate treatments, mostly thinning. Less that 15% have been even-aged harvests.


Monongahela
National Forest
WV
Locator map
Legend
Forest Service Ownership
MP 3.0 - Vegetation Diversity
Forest Proclamation Boundary
0 5 10 20 30 40 50
Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 3.0
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

There are also an estimated 96 miles of trail in this prescription. Roughly 58% of the total area currently provides a Roaded Natural setting, 39% is Semi-Primitive Motorized, 2% is Semi-Primitive Non-Motorized, and 1% is Rural, as measured by the Recreation Opportunity Spectrum (ROS). Motorized recreation is featured—including driving for pleasure and firewood collecting—but non-motorized recreation also occurs. A number of visually sensitive viewpoints and travel ways occur within or adjacent to the prescription areas.

An estimated 36% of the total prescription area has privately owned mineral rights. Within the prescription area are 38 gas wells, not all of which are active or capable of producing, and 19.8 miles of gas pipeline. There are 6.6 miles of other utility corridors in this prescription area, and 2 communication or electronic sites, including 1 Forest repeater site.

There are an estimated 39 miles of currently listed 303(d) impaired streams within the area, including all or portions of Aldrich Branch, Barrenshe Run, Craig Run, Cheat River, Cranberry River, Dry Fork, and Williams River.

Portions of four eligible Wild and Scenic River segments occur within this prescription area, totaling 25.3 miles. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification, and to maintain their outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 3.0			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
North Fork Cherry River	Recreational	Scenery, Recreation	10.8
Glady Fork	Recreational	Recreation	2.8
Laurel Fork	Scenic	Recreation	4.4
Williams River	Recreational	Scenery, Recreation	7.3

Desired Conditions

The Forest is a mosaic of stands of predominantly hardwood trees and associated understories that provide habitat for a variety of wildlife species. The stands vary in size, shape, height, and species depending on the silvicultural system applied.

Desired Vegetation Conditions in Management Prescription 3.0					
Forest Community	**Percent by Age Class for Each Community**				
	Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-120 years)**	**Late Successional (>120 years)**
Conifer	10-20%	10-20%	20-40%	20-40%	10-15%
Northern Hardwoods	12-20%	12-20%	24-40%	24-40%	5-10%
Mixed Cove Hardwoods	12-20%	12-20%	24-40%	24-40%	5-10%
Mixed Oak	12-22%	12-22%	24-40%	24-40%	5-10%
Pine-Oak	12-24%	12-24%	24-40%	24-40%	5-10%

Management activities result in relatively high levels of sustainable timber and mast production. Age class distribution ranges from early to late successional stands, but the predominant age classes are represented by mid and mid-late successional stands (see table above). Roughly 3 to 8 percent of the prescription area units are in maintained or natural openings, including beaver meadows, shrub and brush fields, savannahs, grazing allotments, seeded log landings and logging roads, mine reclamations, utility corridors, and natural disturbance gaps.

The area provides a diversity of habitats for wildlife species, a diverse visual landscape, and considerable human activity resulting from a variety of uses.

A system of roads and trails provides access within the area for public recreation and for administrative and management purposes, including transportation of forest products. Motorized recreation opportunities are featured and public motorized vehicle use is generally provided. Road densities vary considerably but average within 1.0 to 2.0 miles per square mile. Open road densities average 0.5 to 1.0 miles per square mile.

Roads and trails provide abundant opportunities for motorized recreation, including driving for pleasure, forest product gathering, hunting, fishing, and wildlife viewing. All of the area is managed for a Roaded Natural ROS setting. High scenic integrity is maintained along visually sensitive viewpoints and travel ways.

Management Direction for 3.0 – Vegetation Diversity Emphasis		
Type	**Number**	**Direction Description**
1900 - Vegetation		
Goal	3001	Enhance diversity of forest vegetative cover through the dispersion of a variety of species, types, and ages.
Objective	3002	Over the next 10 years regenerate the following amounts of forest vegetation to begin moving toward desired age class conditions for these forest types: Northern hardwoods: 1,000-2,000 acres Mixed cove hardwoods: 8,000-12,000 acres Mixed oak: 3,000-4,000 acres
2200 – Range		
Standard	3003	Management of open areas within allotments shall be primarily for livestock grazing. Intensive management for livestock grazing may occur.
2310 – Recreation System Planning		
Goal	3004	Feature roaded natural ROS class recreation opportunities.
2350 - General Forest Environment Areas		
Standard	3005	Selected areas, trails, or roads may be closed, where appropriate, to motorized vehicles during specific periods to protect resources, provide for public safety, or reduce user conflict. The intent, however, is to provide for public motorized use.
2410 - Timber Resource Management Planning		
Standard	3006	There is no limit on the timing or proportion of the prescription area to be entered for timber practices during an entry cycle.
Guideline	3007	Management with uneven-aged silviculture systems should be based on visual quality, timber products, economics, and site and species capabilities.
Guideline	3008	The following maximum diameter at breast height (dbh) sizes should be used as

Management Direction for 3.0 – Vegetation Diversity Emphasis		
Type	**Number**	**Direction Description**
		guidelines as to when mature trees should be harvested under the uneven-aged silvicultural system. **Forest Type** / **Low Quality Site** / **High Quality Site** Hardwoods / 22” / 28” Conifers / 16” / 22” Oak - Pine / 20” / 24”
2470 - Silvicultural Systems		
Guideline	3009	Use even-aged management when shade-intolerant vegetation is the species objective or when needed for accomplishing diversity objectives. a) Clearcutting with reserve trees is the normal regeneration cutting method to achieve these objectives. Significant exceptions include: 1) Shelterwood may be used when needed for regeneration of a particular species, or visual resource management objectives. 2) Deferred rotation (two-age) cutting may be used to retain large trees well into the next rotation. b) Thinning is a normal practice, particularly on better quality sites.
Guideline	3010	Uneven-aged management should be used when shade-tolerant vegetation is the objective, or when needed to meet scenic integrity objectives. Group selection cuts should be limited to two acres or less.
2470 - Timber Stand Improvement and Reforestation		
Guideline	3011	Healthy trees should be retained in and around developed recreation areas. Timber stand improvement should favor long-lived trees with healthy crowns, flowering trees, vegetation for screening or other objectives of a site-specific vegetation management plan.
2630 – Wildlife Habitat		
Goal	3012	Maintain natural areas of standing water as wildlife watering sources. Create artificial water sources as needed in conjunction with other resource activities.
Objective	3013	Create up to 1,000 acres of wildlife openings over the next 10 years.
Guideline	3014	Conifer species may be planted or controlled where needed to enhance vegetative diversity for wildlife.
7100 - Transportation System Planning		
Goal	3015	Provide a road system adequate to manage the area for intensive timber operations.
Guideline	3016	New road construction should not cause road density within the prescription area unit to exceed 1.0 mile per square mile for collector roads, or 4.0 miles per square mile for any combination of collector and local roads.
7730 – Transportation System Operation		
Guideline	3017	Public motorized vehicle access and use is compatible with this Management Prescription.

Management Prescription 4.1 - Spruce and Spruce-Hardwood Ecosystem Management

Management Emphasis

This management prescription focuses on restoration and management of disjunct red spruce and spruce-hardwood communities of the central Appalachians. This community has been greatly reduced and altered from its former extent, composition, and structure, primarily due to exploitative management that occurred prior to the establishment of the Monongahela National Forest. The Forest now contains most of the remaining acreage of central Appalachian spruce and spruce-hardwood forest, as well as most of the acreage upon which it formerly occurred. Therefore, the Forest bears primary responsibility for the restoration and management of this unique community. This prescription emphasizes the following:

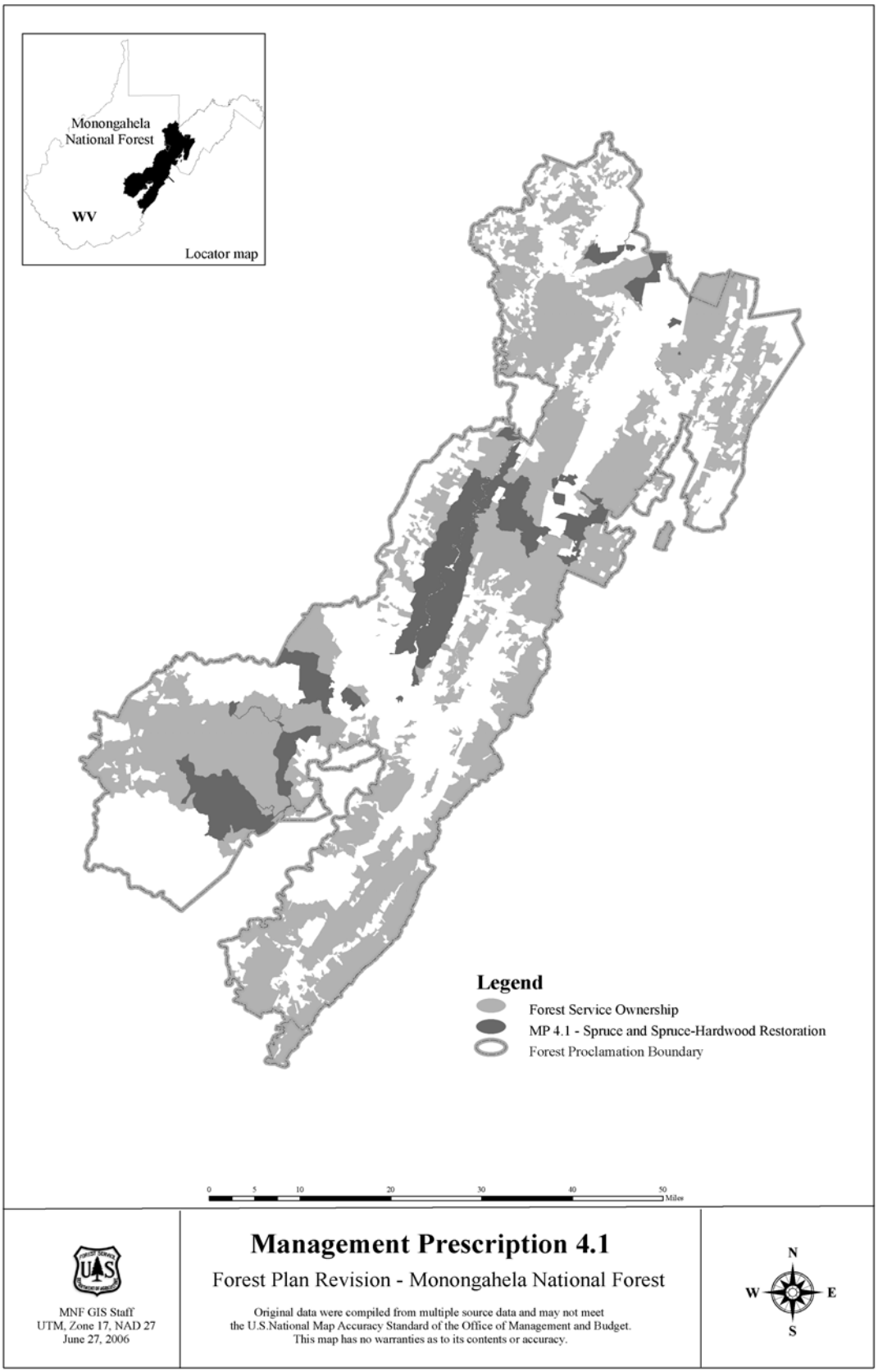
- Active and passive restoration of spruce and spruce-hardwood communities.
- Research or administrative studies on spruce restoration.
- Recovery of threatened and endangered species and other species of concern associated with spruce and spruce-hardwood communities.
- Management of hardwood communities where spruce is a negligible or absent component.
- Generally restricted public motorized access and use.
- A mix of forest products.

Area Description

This prescription area contains much of the lands that have the potential natural vegetation capable of supporting red spruce or spruce-hardwood communities. In order to effectively capture the best representation of these communities, intermixed areas that do not support spruce or spruce-hardwood communities were also included within the prescription boundaries.

Lands assigned to this prescription comprise a total of 153,600 acres, or 16.8 percent of the entire Forest (see MP map). In general, elevations are above 3200 feet. Soils tend to have frigid soil temperature regimes; however, landscape and topography can influence soil conditions greatly at lower elevations, producing areas dominated by hardwoods or incapable of supporting spruce. Soil pH ranges from extremely acidic to acidic. These areas also have a wide range of soil drainage properties. High-elevation bogs with poorly drained soils occur in this area and are identified as rare communities for terrestrial and aquatic species.

These high-elevation areas tend to receive higher levels of human-caused acid deposition than lower-elevation sites. Monitoring trends show that acidic deposition levels at sites in this region of the country are among the highest in the nation. The effects of acidic deposition on ecosystems vary within the prescription area based on the buffering capacity of soil type and underlying geology, as well as the elevation and predominant weather patterns and landforms.


Monongahela
National Forest
WV
Locator map
Legend
Forest Service Ownership
MP 4.1 - Spruce and Spruce-Hardwood Restoration
Forest Proclamation Boundary
0 5 10 20 30 40 50
Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 4.1
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

The major forest communities and their current age classes are depicted in the table below. Openings presently account for about 4 percent of vegetation conditions.

Current Vegetation Conditions in Management Prescription 4.1						
Forest Community	**Percent of Community in Rx Area**	**Percent by Age Class for Each Community**				
		Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-120 years)**	**Late Successional (>120 years)**
Spruce, Spruce-hardwood, and Hemlock	19.2	7.2	11.1	39.9	32.3	9.5
Northern Hardwoods	37.9	3.9	5.6	36.5	51.6	2.4
Mixed Cove Hardwoods	36.4	2.7	4.6	38.5	52.5	1.7
Mixed Oak	0.3	1.1	0.0	24.7	74.2	0.0
Pine-Oak	1.0	43.4	21.6	35.0	0.0	0.0

Although this prescription area provides habitat for many species, it is the primary habitat for a number of federally listed or Regional Forester's Sensitive Species, including West Virginia northern flying squirrel, Cheat Mountain salamander, and northern goshawk. This area also provides the headwaters for many of the coldwater native trout streams on the Forest. There are 9 range allotments located in the area, comprising an estimated 2,220 acres. Only 13 acres of the prescription area are estimated to be in Fire Regime 1, Condition Class 3, and only 11,775 acres (8%) in Fire Regime III, Condition Class 2.

There are an estimated 182 miles of Forest System Level 3, 4, and 5 roads in this prescription, creating an average open road density of 0.75 miles per square mile. An estimated 12,000 acres of timber harvest activity have occurred within this prescription area since 1986. About 65-70% of these acres were intermediate treatments, mostly thinning. Only 15% of the acres were even-aged harvests.

There are also an estimated 144 miles of trail in this prescription area. Roughly 12% of the area has a Semi-Primitive Non-motorized ROS setting, 50% is Semi-Primitive Motorized setting, and 38% is Roaded Natural. A number of visually sensitive viewpoints and travel ways occur within or adjacent to the prescription areas, including the Highland Scenic Highway and the Cass Scenic Railroad.

An estimated 62% of the prescription area has privately owned mineral rights. Within the prescription area are 24 gas wells, not all of which are active or capable of producing, and 12.1 miles of gas pipeline. There are 12 miles of other utility corridors in this prescription area, and 3 communication or electronic sites, including 1 Forest repeater site.

There are an estimated 67 miles of currently listed 303(d) impaired streams within the area, including all or portions of Armstrong Run, Big Run, Birchlog Run, Buck Run, Carpenter Run, Cranberry River, Crouch Run, Dogway Fork, First Fork, Fish Hatchery Run, Gandy Run, McGee

Run, North Fork Blackwater River, North Fork Cranberry River, Shavers Fork, Sugar Creek, Stonecoal Run, Tea Creek, Tygart Valley River, Whitmeadow Run, Williams River, Windy Run, and Yokum Run.

Portions of five eligible Wild and Scenic River segments, totaling 53.9 miles, occur within the prescription area. Most portions of the Blackwater River and Shavers Fork are not actually on NFS lands, but the 0.25 mile corridors on either side of the streams extend onto NFS lands for much of their length. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 4.1			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
Blackwater River	Scenic	Scenery, Recreation	4.4
North Fork Cherry River	Recreational	Scenery, Recreation	4.8
Otter Creek	Recreational	Scenery, Recreation	0.5
Shavers Fork	Recreational	Scenery, Recreation	35.2
Williams River	Recreational	Scenery, Recreation	9.0

Desired Conditions

The prescription area is a mosaic of spruce, spruce-hardwood, and hardwood communities. The spruce and spruce-hardwood communities provide habitat to help meet recovery plan objectives for WVNFS and CMS. Stands with a viable spruce component in the overstory or understory are managed to restore the natural species composition, structure, and function of spruce and spruce-hardwood communities. Restoration management focuses on achieving spruce and mixed spruce-hardwood species composition, as well as developing the multi-age stand structure that likely existed in this community prior to exploitation. Most spruce and spruce-hardwood stands are developing late successional conditions over time. At the stand level, these conditions include a mix of trees of different ages, complex vertical habitat structure, scattered small openings (< 2 acres) dominated by shrubs and saplings, scattered over-mature trees, and an abundance of snags, den trees, and downed woody debris. Research projects or administrative studies provide information and strategies for successfully restoring spruce and spruce-hardwood communities. The following table displays the desired age class distribution in spruce and spruce-hardwood restoration areas. Up to 5 percent of these areas are in openings.

Desired Vegetation Conditions in Spruce and Spruce-hardwood Restoration Areas					
Forest Community	**Percent by Age Class for Each Community**				
	Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-120 years)**	**Late Successional (>120 years)**
Spruce and Spruce-Hardwood	3 - 8	3 - 8	5 - 15	5 - 15	60 - 80

During the early decades of the planning period, restoration focuses on achieving spruce and spruce-hardwood species composition in the overstory, along with establishing vertical habitat structure in early-mid, mid, and mid-late successional stands. The mid-late successional and late successional age classes include stands that are trending toward multi-aged conditions. The multi-aged conditions are the result of active restoration as well as natural succession in passively managed areas. Therefore, the 80-120 and 120+ ages refer to the time elapsed since the last stand replacing disturbance, and not necessarily to the ages of individual trees.

Stands with little or no potential for spruce restoration are managed to promote healthy hardwood communities with a mix of age classes. Management activities result in relatively high levels of sustainable mast production, and they contribute to the long-term sustained yield of timber products. Age class distribution ranges from openings maintained for wildlife habitat to a network of late successional stands, but the predominant age class is represented by mid successional and mid-late successional stands that feature sustainable mast production. The following table displays desired vegetative conditions in hardwood management areas:

Desired Vegetation Conditions in Areas with No Spruce Restoration Potential					
Forest Community	**Percent by Age Class for Each Community**				
	Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-120 years)**	**Late Successional (>120 years)**
Northern Hardwoods	15-20%	15-20%	35-45%	15-25%	5-10%
Mixed Cove Hardwoods	15-20%	15-20%	35-45%	15-25%	5-10%
Mixed Oak	10-15%	10-15%	25-35%	20-30%	15-20%
Pine-Oak	15-20%	15-20%	25-35%	20-30%	10-15%

A system of roads provides access within the area for administrative and management purposes, including transportation of forest products. Non-motorized recreation opportunities are featured and public motorized vehicle use is often restricted. Some roads may be open to provide public access or motorized recreation opportunities. Road densities vary considerably but average within 1.0 to 2.0 miles per square mile. Open road densities are considerably lower, averaging 0.1 to 0.5 miles per square mile, primarily to reduce disturbance to wildlife and soils. New collector and local roads are typically gated or closed by barricade. Many roads are seeded and managed for wildlife habitat and travel routes.

Trails and closed roads provide opportunities for dispersed recreation, including hiking, mountain biking, hunting, fishing, and wildlife viewing. The area provides limited motorized settings and opportunities. High scenic integrity is maintained along visually sensitive viewpoints and travel ways. Special uses and facilities do not detract from the desired ROS settings for the area.

Management Direction for 4.1 - Spruce and Spruce-Hardwood Ecosystem Management		
Type	**Number**	**Direction Description**
1900 - Vegetation		
Goal	4101	Maintain or enhance the spruce component within mixed spruce-hardwood communities. Maintain a hardwood component in mixed stands as well to provide mast, nesting habitat, and species diversity.
Goal	4102	Restore a spruce component to stands that contain understory spruce or scattered overstory spruce.
Goal	4103	Restore multi-age ecosystem structure in areas where spruce is being restored, enhanced, or maintained.
Goal	4104	Work with Fernow Research Work Unit of Northeast Research Station, academia, USFWS, or State and Private Researchers on designing and monitoring spruce restoration efforts.
Goal	4105	Restore Norway spruce and red pine plantations to native red spruce and mixed hardwood species.
Goal	4106	In hardwood communities where spruce restoration is not practical, create and maintain a mix of age classes, favoring mast-producing species where possible.
Objective	4107	Within stands where spruce can be restored or enhanced, conduct approximately 1,000 to 5,000 acres of species composition and habitat structure enhancement work over the next 10 years. Prioritize efforts in areas that would restore habitat connectivity, increase the size of existing habitats, and provide travel corridors between existing habitats.
Objective	4108	Over the next 10 years regenerate approximately 2,000 to 5,000 acres of hardwoods on suited timberlands where spruce cannot be restored to begin moving toward desired age class and habitat diversity conditions.
Standard	4109	Maintain culls and snags to provide for wildlife habitat. Manage culls to provide dens and future snags. If non-commercial and in excess of wildlife needs, culls may be girdled or injected with herbicide to produce snags. When thinning or implementing other vegetation management, retain at least 5 culls per acre, if available. Retain culls and all snags except as noted below. a) Snags and culls may be removed when they are public safety hazards along roads, trails, or established campsites, or safety hazards in harvest units. b) Snags and culls may be removed for scenery management purposes in locations of very high or high scenic integrity such as in a vista or in the immediate foreground of a road open for public motor vehicle travel. See also snag and cull direction in TEP Species section for those areas that intersect with Indiana bat primary range.
Guideline	4110	Red spruce should be restored, maintained, or enhanced in stands where potential natural vegetation includes a spruce component and there is some spruce present in the overstory or understory within or immediately adjacent to the stand. Spruce restoration should not normally be conducted in stands without an understory red spruce component or natural red spruce seed source. In stands greater than 80 years old, with greater than 30% spruce in the overstory, community compostion and structure should be maintained primarily through natural processes.
See TEP Standard TE64 for vegetation management activities that may occur in WVNFS suitable habitat.		
2200 - Range		
Goal	4111	Maintain open areas within allotments predominantly by grazing cattle. Maintain a mixture of grass species suitable for supporting livestock through the grazing season.
Standard	4112	Grazing allotments shall be fenced, including division fences to allow rotational grazing. Barbed or electric fences are allowed, but wooden rail fences are preferred. Woven wire shall not be used in new fences.
Guideline	4113	Ponds, water troughs, pipes, salt boxes, gravelling around troughs and similar

Management Direction for 4.1 - Spruce and Spruce-Hardwood Ecosystem Management		
Type	**Number**	**Direction Description**
		developments may be used, but landscaping materials and locations should be chosen to blend in with the natural environment.
2310 - Recreation System Planning		
Goal	4114	Feature primarily non-motorized recreation opportunities, but maintain motorized opportunities on major travel ways where they currently exist.
See TEP Species Standard TE65 for restrictions on recreation facility development within WVNFS suitable habitat.		
2350 – Recreation: General Forest Areas		
Standard	4115	Trail management shall be compatible with the desired ROS setting of the area.
Standard	4116	New trail construction shall not cause trail density in the prescription unit to exceed 2 miles per square mile. This standard does not apply to relocation of existing trails.
2410 - Timber Resource Management Planning		
Standard	4117	The prescription area may be entered every year for ecological restoration or timber management practices, based on the consideration of multiple resources.
Standard	4118	No more than 40 percent of forested NFS lands within each 4.1 prescription area unit shall be harvested over a 10-year period. Thus, at least 60 percent of the unit shall provide security areas for wildlife during the 10-year period.
Standard	4119	Unforeseen activities such as timber salvage or pipeline installation, shall be counted toward the 40% disturbance standard above.
2470 - Silvicultural Systems		
Guideline	4120	In areas where spruce and spruce-hardwood restoration, enhancement, or maintenance is practiced, multi-aged, uneven-aged, and stand improvement cuts are the preferred silvicultural treatments. a) Group selection, modified shelterwood and two-age harvest methods are preferred when the objective is spruce or spruce-hardwood ecosystem restoration, enhancement, or maintenance.. Group selection cuts should be limited to two acres or less. Complete overstory removal should be avoided. b) Thinning in spruce and spruce-hardwood stands should leave at least 75% of the existing basal area. c) Restoration or enhancement treatments may be implemented at any stand age.
Guideline	4121	Outside of spruce and spruce-hardwood restoration areas, either even-aged and uneven-aged silvicultural systems may be used. a) Clearcutting with reserve trees is the preferred method when regeneration of shade intolerant or moderately tolerant vegetation (e.g., black cherry, oak) is the objective. b) Shelterwood is the preferred method when advanced or potential advanced regeneration is not present. c) Uneven-aged management may be used when shade-tolerant vegetation is the objective, when needed to meet scenery management goals, or when needed to meet other objectives. Group selection cuts should be limited to two acres or less. d) Regeneration harvest may occur after a stand attains the age of 70 years old.
2470 - Reforestation and Timber Stand Improvement		
Guideline	4122	Spruce stands may be thinned at regular intervals, depending on their need.
Guideline	4123	Use artificial regeneration where needed to attain required stocking guides.
Guideline	4124	Red spruce may be planted, typically on a small scale, as part of research and administrative studies, or when determined to be a practical strategy for restoration or enhancement.

Management Direction for 4.1 - Spruce and Spruce-Hardwood Ecosystem Management		
Type	**Number**	**Direction Description**
Guideline	4125	Use 1/3 acre leave clumps around scattered residual overstory spruce trees and snags in even-age regeneration units to reduce windthrow potential. Leave clumps at the rate of one clump for each 5 to 8 acres regenerated. Channel buffers may be counted toward this requirement where their configuration allows them to serve both purposes.
Guideline	4126	TSI and site preparation work should favor spruce trees, shrubs beneficial to wildlife, vegetation for screening, and other objectives of a site-specific silvicultural prescription.
Guideline	4127	Cut all non-merchantable stems > 1″ dbh during site preparation for natural regeneration activities except for leave clump trees, marked cull trees and snags, spruce and hemlock trees or other desirable advance regeneration, and shrubs beneficial to wildlife.
Guideline	4128	Vines in regeneration areas may be controlled when they threaten adequate stocking of desirable species in the new stand. Vines may be controlled with hand tools and/or herbicide.
2430 - Other Than Commercial Sales		
Standard	4129	Moss collection is prohibited except for research or scientific purposes.
Guideline	4130	Personal use or marked firewood sales may be cut anytime during the year along Forest roads open to the public.
2630 – Wildlife Habitat		
Guideline	4131	Maintain natural areas of standing water as wildlife watering sources. Artificial areas of standing water may be created in conjunction with other resource activities as the opportunity arises.
Guideline	4132	Roads intended for intermittent use should be revegetated between uses and typically managed as wildlife habitat.
2700 – Special Uses		
See TEP Species Standard TE07 for restrictions on special use authorizations within WVNFS suitable habitat.		
2800 – Minerals		
See TEP Species Standard TE66 for restrictions on federal gas development within WVNFS suitable habitat.		
5100 – Fire		
Guideline	4133	Prescribed fire use should be avoided in spruce restoration areas.
7100 - Transportation System Planning		
Objective	4134	Reduce open road density to 0.5 miles or below over the next 10 years in order to reduce impacts to soil and water resources and wildlife species of concern.
Guideline	4135	Road densities and impacts should be minimized to reduce disturbance in the area. a) New road construction should not cause road density within the prescription area unit to exceed 1.0 mile per square mile for collector roads, or 2.5 miles per square mile for any combination of collector and local roads. b) New collector roads should generally be gated and maintained for recurring administrative use. c) New local roads should generally be closed between projects by physical barricades. Use should be intermittent. Public motorized use should generally not occur from April 15 to August 1 to reduce disturbance to wildlife.

Management Prescription 5.0 – Designated Wilderness

Management Emphasis

This prescription emphasizes management of Congressionally designated wilderness to:

- Preserve wilderness attributes and the natural environment for future generations.
- Provide for challenging recreation opportunities in a wilderness setting.

Area Description

The following five areas are assigned to this prescription:

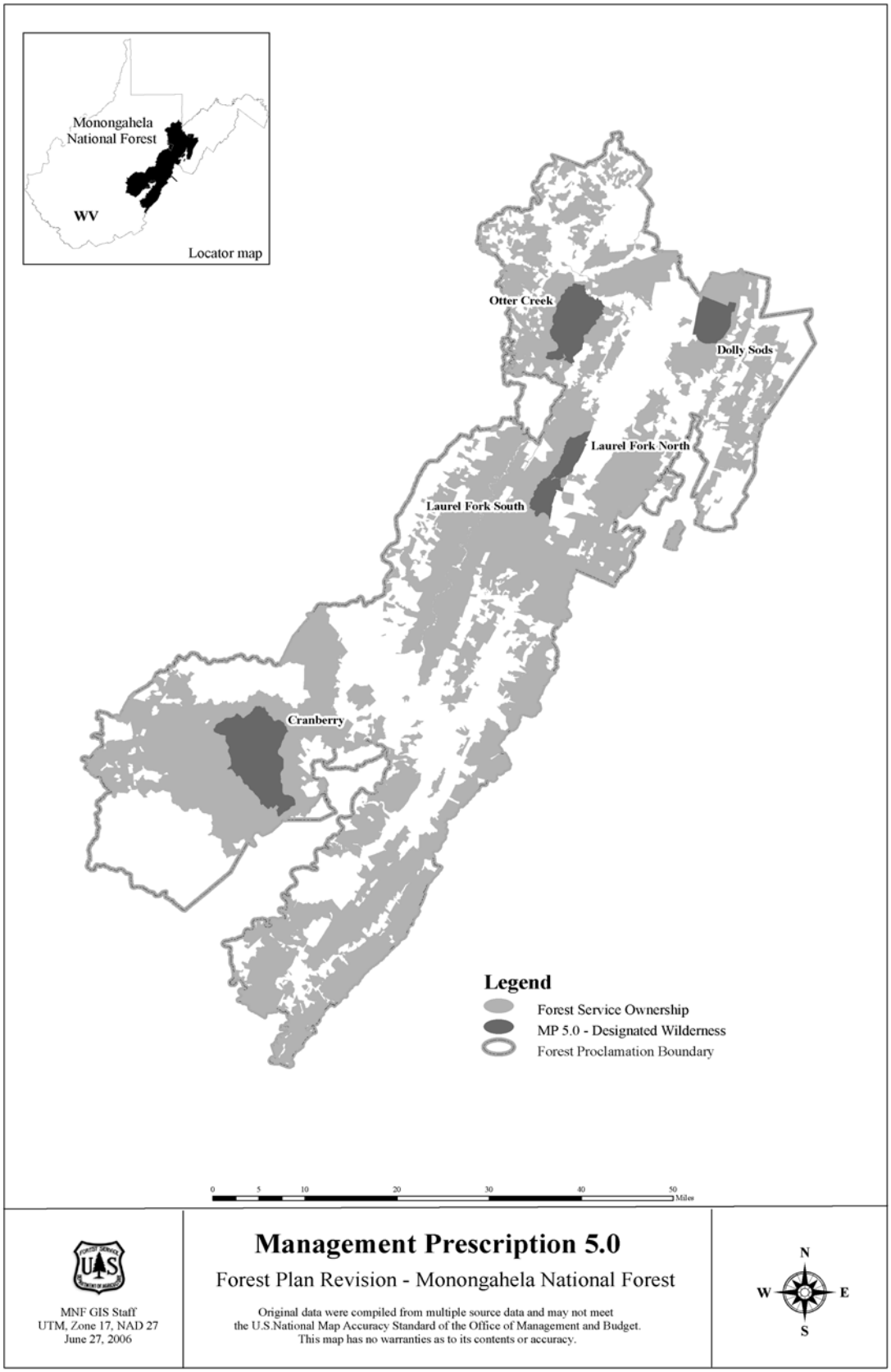
Designated Wilderness	Acres
Cranberry Wilderness	35,864
Dolly Sods Wilderness	10,215
Laurel Fork North Wilderness	6,055
Laurel Fork South Wilderness	5,997
Otter Creek Wilderness	20,000
Total Acres	**78,131**

The 78,131 acres represent the official acreage of the Wildernesses; however the acreage for the Management Prescription is closer to 78,700. This discrepancy is due to the fact that today's GIS technology measures areas differently than technology used 20 years ago, and that there are about 550 acres in the Dolly Sods Wilderness that were not accounted for as Wilderness in 1986.

Lands assigned to this prescription comprise an estimated 8.6 percent of the Forest (see 5.0 map). Elevations range from 2,300 to 4,500 feet, and these areas occur on a variety of land and soil types. The major forest communities and their current age classes are depicted in the table below.

Current Vegetation Conditions in Management Prescription 5.0						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	7.3	0	0.7	40.6	54.7	4.0
Northern Hardwoods	52.2	0	0.3	40.9	52.6	6.2
Mixed Cove Hardwoods	37.6	0	4.7	10.2	84.5	0.5
Mixed Oak	0.4	0	0	0	100.0	0
Pine-Oak	0.2	0	0	38.8	61.2	0

Because these prescription areas have a diversity of landforms and vegetation types, they provide a variety of habitat for wildlife, fish, and plant species. For these same reasons, a variety of rare flora and fauna, including threatened and endangered species, and non-native invasive species are also found within this prescription.


Monongahela
National Forest
WV
Locator map
Otter Creek
Dolly Sods
Laurel Fork North
Laurel Fork South
Cranberry
Legend
Forest Service Ownership
MP 5.0 - Designated Wilderness
Forest Proclamation Boundary
0 5 10 20 30 40 50
Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 5.0
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

These areas are primarily forested with access provided by trail. They offer a natural setting that provides opportunities for semi-primitive non-motorized recreation where natural ecological processes occur.

Although there are remnants of old roads and railroad beds in parts of the prescription areas, all roads have been abandoned and allowed to return to natural vegetation. No timber harvest activity has occurred within these prescription areas since well before their designation.

None of the prescription area is in Fire Regime 1, Condition Class 3, and only 5,500 acres (7%) are in Fire Regime III, Condition Class 2.

There are an estimated 148 miles of trail in these areas. All of the areas are managed for a Semi-Primitive Non-motorized ROS setting. Non-motorized recreation is currently featured, including hiking, camping, hunting, fishing, and wildlife viewing. The areas are considered to have high scenic integrity.

There are no gas wells or pipelines, utility corridors, communication sites, electronic sites, or range allotments located in the area. An estimated 4% of the prescription area has privately owned mineral rights.

There are an estimated 23 miles of currently listed 303(d) impaired streams within the area, including all or portions of Dry Fork, Left Fork North Fork of Cranberry River, North Fork Cranberry River, Middle Fork Williams River, Red Creek, and Tumbling Rock Run.

Portions of four eligible Wild and Scenic River segments, totaling 33.8 miles, occur within or adjacent to this area. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain their outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 5.0			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
Otter Creek	Scenic	Scenery, Recreation	10.7
Laurel Fork	Scenic	Recreation	16.5
Red Creek	Scenic	Scenery, Recreation	5.3
Dry Fork	Recreational	Recreation	1.5

Desired Conditions

Visitors can find outstanding opportunities for unconfined recreation, including exploration, solitude, risk, and challenge. The area is primarily affected by the forces of nature, with human imprint substantially unnoticeable. Native terrestrial and aquatic communities are emphasized.

The area provides a diversity of habitats for wildlife species, as well as abundant remote habitat for species that are sensitive to disturbance. Management activities are typically extremely low to non-existent. Age class distribution is moving toward dominance by late successional stands where gaps form from natural disturbances as trees age.

There are no system roads open to the public, and motorized use and mechanized transport do not occur. Facilities, if they occur, are minimal and of a primitive nature. Any special uses are compatible with the wilderness setting.

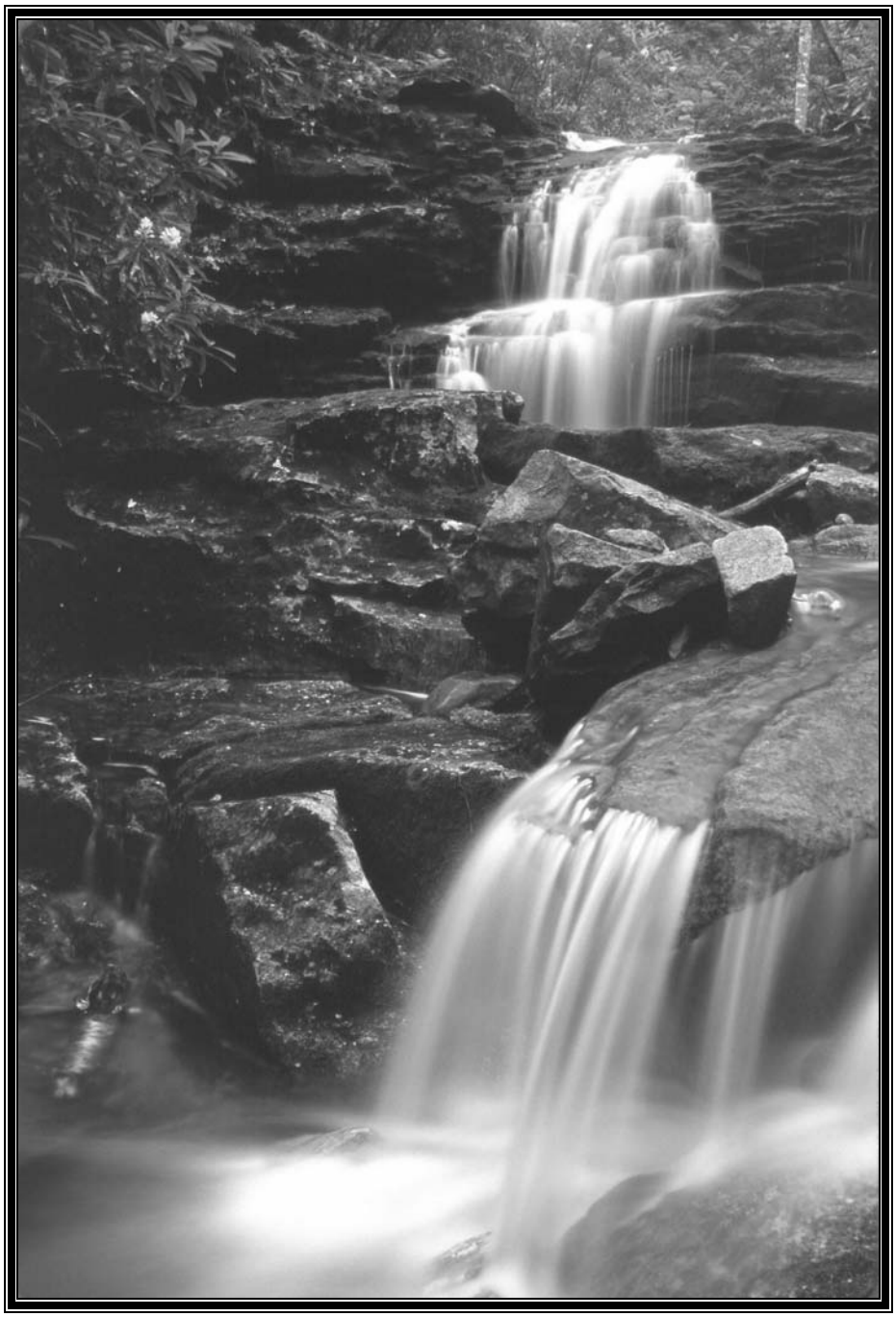
The areas provide abundant opportunities for challenging non-motorized recreation, including hiking, horseback riding, photography, hunting, fishing, and wildlife viewing. All of the area is managed for a Semi-Primitive Non-motorized ROS setting. Very High scenic integrity is maintained throughout the areas.

Management Direction for 5.0 – Designated Wilderness		
Type	**Number**	**Direction Description**
1530 - Interdepartmental State, County, and Local Agencies		
Guideline	5001	Coordinate with the Federal Aviation Administration and the military to prevent undesirable aircraft noise resulting from low altitude commercial and military flights across designated wilderness.
1590 – Search and Rescue		
Standard	5002	Motorized use and mechanized transport may be used for life-threatening situations in search and rescue operations, with Forest Supervisor approval. In situations that are not life-threatening, the Forest Supervisor may authorize motorized use or mechanized transport on a case-by-case basis if circumstances warrant; for example, to remove a deceased person from the area.
1900 - Vegetation		
Goal	5003	Ecological processes dominate vegetation change on the landscape.
Standard	5004	Commercial timber harvest is not allowed. Vegetation management shall not be used to create vistas or alter the natural environment. Vegetation may be treated to rehabilitate trails or recreation use sites. Revegetation activities must use native vegetation.
Standard	5005	Vegetation management is allowed as a component of actions needed to protect wilderness attributes and adjacent lands from non-native invasive species, pests, pathogens, or fire.
1920 – Planning		
Objective	5006	Develop Wilderness Implementation Schedules to guide routine activities and implement the Forest Plan.
2200 – Range		
Standard	5007	Livestock grazing is not permitted in the current Wilderness Areas on the Forest.
2350 – Recreation: General Forest Areas		
Goal	5008	Recreation uses are consistent with preservation of wilderness attributes.
Standard	5009	The maximum party size allowed is 10.
Standard	5010	Registration permits for recreation use shall not be required unless: a) Required by Regional or National Policy, or b) Needed to protect wilderness attributes by controlling levels of use, or c) Needed to collect fees.
Standard	5011	Wood fires for cooking or warming may be allowed unless prohibited to protect resource values. Only dead and down wood may be used for fuel wood. Camp stoves are highly recommended for cooking.
Standard	5012	Facilities shall not be provided for the comfort or convenience of users. Facility design must be consistent with the desired SPNM setting. Facilities such as fireplaces, wilderness pit toilets, and gravel surfaces may be provided where necessary for resource protection.

Management Direction for 5.0 – Designated Wilderness		
Type	**Number**	**Direction Description**
Guideline	5013	Trail construction should be of a more primitive standard than elsewhere on the Forest, so as to provide a more challenging recreation experience for the visitor. This challenge should be tempered, however, with adequate resource protection and reasonable precautions for visitor safety. For example, trail bridges are normally regarded as a convenience and not provided, but may be provided for safety or resource protection reasons.
Guideline	5014	Trails are maintained primarily for resource protection. A range of trail maintenance levels can occur, depending on the amount of trail use and needed resource protection measures. Hand tools are normally used, but motorized use or mechanized transport may be authorized in an emergency situation that threatens the health and safety of visitors. The Forest Supervisor is authorized to allow this use.
Guideline	5015	Appropriate uses may include, but are not limited to: hiking, backpacking, camping, nature study and research, mountain climbing, horseback riding, fishing, hunting, and cross-country skiing.
2360 - Special Interest Areas		
Standard	5016	Cultural resources may be evaluated as needed, and may be stabilized and preserved if historically significant.
Standard	5017	On-site cultural resources interpretation shall not occur.
2380 – Scenery Management		
Standard	5018	Management activities shall meet the scenery integrity level of very high.
Guideline	5019	Structures and remnants of facilities—such as old railroad ties, culverts, or bridges—may be present. Those causing unacceptable adverse impacts on visitor's experience of the wilderness should be removed. No intensive project to remove all such features is needed, but they should be phased out as the opportunity presents itself. Removal is regarded as a suitable project for volunteer groups.
2430 - Other Than Commercial Sales		
Standard	5020	Gathering firewood for home or commercial use is prohibited.
Standard	5021	The collection of forest products is prohibited except where authorized for scientific or research purposes.
2500 – Water and Soil		
Standard	5022	Activities to rehabilitate human-caused erosion and siltation are allowed but must be consistent with the ROS setting and SMS integrity level.
Standard	5023	Materials for erosion and siltation control shall be from on-site sources and be designed to blend in with the surrounding environment. Log structures shall be one log high. No concrete or gabions are allowed.
Guideline	5024	Trail construction should be located and designed to minimize soil disturbance.
Guideline	5025	Water quality should be maintained by ecological processes except: a) Where influenced by water treatment facilities located outside Wilderness boundaries; b) To correct problems caused by people, or; c) To correct problems caused by natural events that threaten downstream health or safety.
2630 - Fish Habitat		
Standard	5026	Activities to improve fish habitat are allowed but must be consistent with Wilderness attributes.
Standard	5027	Materials for fish habitat improvement shall be from on-site sources and be designed to blend in with the surrounding environment. Log structures shall be no more than one log high. No concrete or gabions are allowed.
Standard	5028	Fish stocking within the Wilderness must be by non-mechanical means only.

Management Direction for 5.0 – Designated Wilderness		
Type	**Number**	**Direction Description**
Standard	5029	No new recreational fishing impoundments are allowed.
Standard	5030	Limestone rotary drums are not allowed.
2700 – Special Uses		
Standard	5031	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 as authorized by the President according to the Wilderness Act of 1964.
Standard	5032	Permits for storage of personal property, equipment, or supplies shall not be granted.
Guideline	5033	Non-recreation special use permits should not detract from the wilderness attributes of the area.
Guideline	5034	Recreation special use permits, including outfitter guide operations, should provide SPNM opportunities or at least be consistent with the wilderness attributes of the area.
2800 – Minerals		
Standard	5035	Federal minerals are withdrawn from leasing pursuant to the Wilderness Act of 1964.
Guideline	5036	Coordinate private mineral operations and mitigation measures to the extent allowed by deed and law to minimize adverse effects on wilderness attributes.
3400 – Integrated Pest Management		
Guideline	5037	Insect and disease control is allowed in Wilderness to protect Wilderness attributes and adjacent land values and landowner safety. Integrated Pest Management methods shall be used to minimize or prevent the development of pest or pathogen problems. Where problems are unavoidable, select a solution that provides the most beneficial method based on its ability to preserve wilderness attributes, effectiveness, safety, and environmental protection.
Standard	5038	Regional Forester approval must be obtained for pesticide applications in Wilderness.
4000 – Research		
Guideline	5039	Cooperate with research intended to develop basic knowledge on ecological processes, human behavior, or Wilderness management problems.
5100 – Fire		
Standard	5040	Wildfires shall typically be suppressed.
Standard	5041	Chainsaws, portable pumps, or retardant drops from aircraft in fire suppression shall not be used unless approved by the Forest Supervisor. On-the-ground applications of fire retardant chemicals may be approved by the Forest Supervisor.
Standard	5042	The Forest Supervisor must approve the use of tractors, tractor/plows, tracked or wheeled motorized equipment for emergency use within Wilderness.
5300 – Law Enforcement		
Standard	5043	Law enforcement shall be used for the prevention or correction of non-conforming uses.
5400 – Land Ownership		
Standard	5044	Recommendations for the use of condemnation shall be limited to: a) rights-of-way, and b) to acquire surface and subsurface values where conflicting uses of other ownerships preclude maintenance of Wilderness attributes, except where otherwise provided for by Law.
Standard	5045	Lands allotted to this prescription shall not be candidates for exchange.
6700 – Public Safety		
Goal	5046	Inform visitors to Dolly Sods of the presence of old ordnance remaining from military exercises during World War II. Alert the proper authority to remove ammunition discovered by visitors.
7160 – Signs		
Standard	5047	Trail signs may be provided within wilderness areas, provided:

Management Direction for 5.0 – Designated Wilderness		
Type	**Number**	**Direction Description**
		a) The amount of signs and trail blazing is kept to the minimum needed for resource protection. b) The sign standard is a routed wooden sign allowed to weather naturally.
7300 – Buildings and Structures		
Standard	5048	No buildings or structures shall be constructed, except as authorized by the act establishing the Wilderness.
7420 – Water Supply		
Standard	5049	Drinking water sources shall not be developed.
7450 – Air Quality		
Goal	5050	Work with Federal and State air quality management agencies to maintain or improve Air Quality Related Values (AQRVs) in Class I air quality areas, which currently include the Otter Creek and Dolly Sods Wildernesses.
Objective	5051	Identify the AQRVs for each Class I air quality area on the Forest. Define the limits of acceptable change (LAC) appropriate for each AQRV that would help maintain or improve protect Wilderness AQRVs.
Objective	5052	Participate in regional planning organizations (such as VISTAS) that are examining ways to reduce impacts to visibility and other AQRVs in Class I areas of the region.
Objective	5053	Review all Prevention of Significant Deterioration (PSD) permits that might affect AQRVs in Class I areas, using screening procedures specific to the Otter Creek and Dolly Sods Wildernesses, current federal land manager AQRV analysis guidance, and current EPA-approved dispersion models.
7710 - Transportation System Planning		
Standard	5054	No roads shall be constructed or maintained except as authorized by the act establishing a particular area, or as required by outstanding or reserved rights.
Standard	5055	Roads that are constructed to respond to statute or outstanding/reserved rights shall be built to the minimum standard needed to protect resources and provide for user safety, and shall be decommissioned and rehabilitated at the end of operations or need.
Standard	5056	Motorized vehicles, motorized equipment, motorboats and other forms of motorized use or mechanical transport are not allowed except as authorized by the act establishing a particular area, or as required by outstanding or reserved rights.



Waterfall – Dolly Sods Wilderness

Management Prescription 5.1 - Recommended Wilderness

Management Emphasis

This prescription emphasizes management of areas recommended for wilderness study to:

- Maintain wilderness attributes and the natural-appearing environment
- Provide backcountry recreation opportunities.

The intent of this prescription is to maintain wilderness attributes and management options until Congress decides whether or not to designate these areas as wilderness. If Congress decides to designate them as wilderness, the areas would be assigned the 5.0 Wilderness Management Prescription. If Congress decides not to designate them, the areas would be assigned a 6.2 Management Prescription.

Area Description

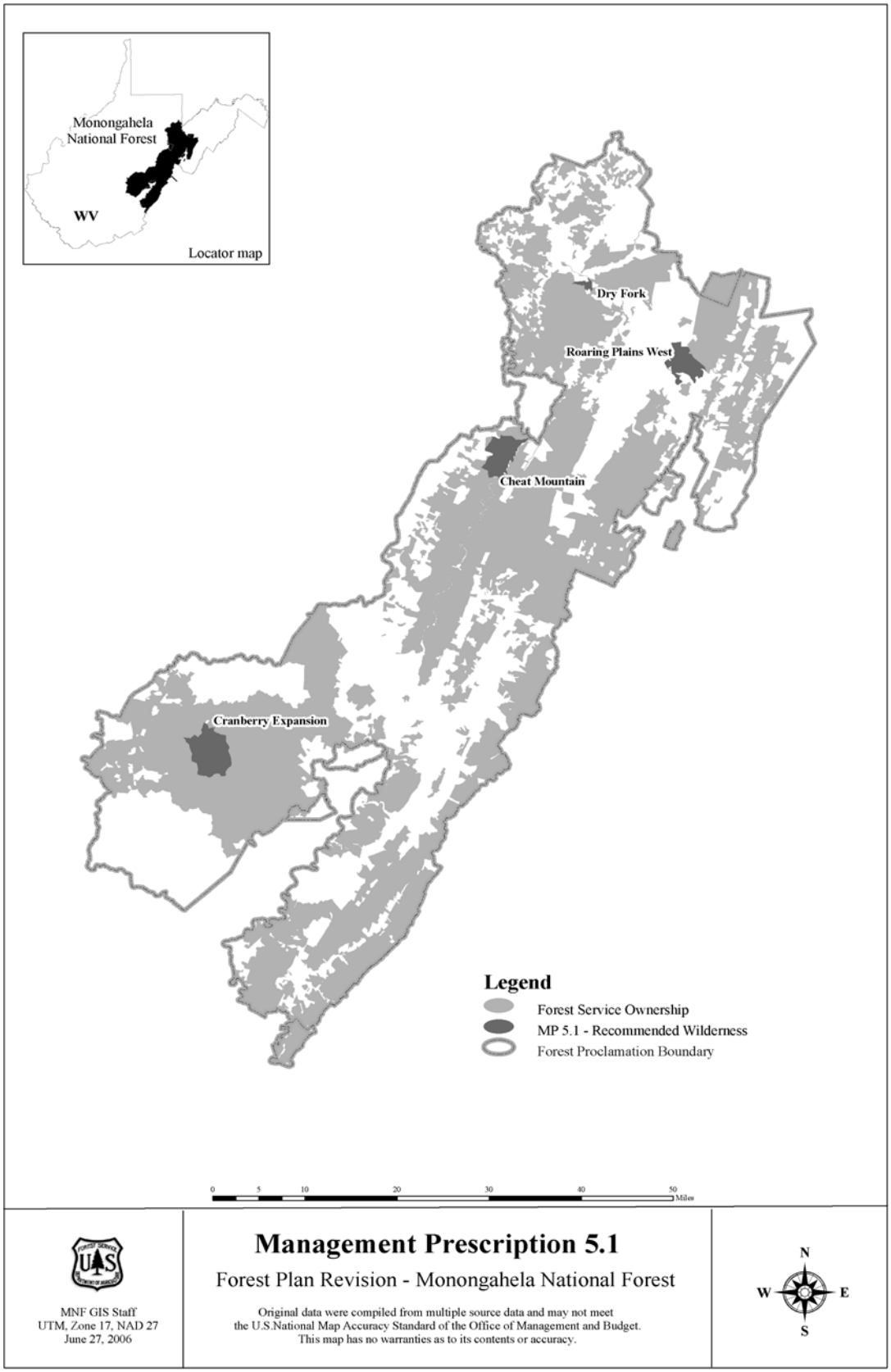
The following areas are assigned to this prescription:

Wilderness Study Areas	Acres
Cheat Mountain	7,955
Cranberry Expansion	12,165
Dry Fork	739
Roaring Plains West	6,825
Total Acres	**27,694**

Lands assigned to this prescription are in four separate areas totaling an estimated 27,700 acres, or about 3 percent of the Forest. Elevations range from 1,800 to 4,700 feet (see map below). These areas occur on a variety of land and soil types. The major forest communities and their current age classes are depicted in the table below.

Current Vegetation Conditions in Management Prescription 5.1						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	10.0	0.0	0.0	55.6	44.1	0.3
Northern Hardwoods	35.6	0.0	1.3	51.6	47.0	0.1
Mixed Cove Hardwoods	48.1	0.0	5.4	57.2	36.0	1.4
Mixed Oak	1.6	0.0	0.0	19.8	80.2	0.0
Pine-Oak	0.0	0.0	0.0	0.0	0.0	0.0

Because these prescription areas have a diversity of landforms and vegetation types, they provide a variety of habitat for wildlife, fish, and plant species. For these same reasons, a variety of rare flora and fauna, including threatened and endangered species, and non-native invasive species are also found within this prescription.


Monongahela
National Forest
WV
Locator map
Dry Fork
Roaring Plains West
Cheat Mountain
Cranberry Expansion
Legend
Forest Service Ownership
MP 5.1 - Recommended Wilderness
Forest Proclamation Boundary
0 5 10 20 30 40 50
Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 5.1
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

These areas are mostly forested and offer a natural setting that provides opportunities for semi-primitive non-motorized recreation where natural processes primarily occur. Remnants of old roads and railroad beds exist in parts of the prescription areas, but almost all of these features have been abandoned and allowed to return to natural vegetation. There are no roads open to public vehicle traffic. Only 7 acres of timber harvest activity have occurred in one of the areas (Cranberry Expansion) within the last 10 years.

An estimated 27 miles of trail exist in the prescription areas. An estimated 59 percent of the area currently meets a Semi-primitive Non-motorized (SPNM) ROS setting, 32 percent meets a Semi-Primitive Motorized setting, and 9% meets a Roaded Natural setting. Non-motorized recreation is currently featured, including hiking, horseback riding, mountain biking, camping, hunting, fishing, and wildlife viewing. These areas are considered to have high scenic integrity. A number of visually sensitive viewpoints and travel ways occur within or adjacent to the prescription areas.

An estimated 61% of the prescription area has privately owned mineral rights. There are no gas wells or pipeline in the prescription areas, but a gas pipeline forms one of the boundaries of Roaring Plains West. There are no other utility corridors in this prescription area, but there is one communication/electronic site. There are no range allotments located in the area.

There are an estimated 9 miles of currently listed 303(d) impaired streams within the area, including portions of Birchlog Run, Cold Run, Lick Branch, Little Rough Run, Shavers Fork, and Williams River.

Portions of three eligible Wild and Scenic River segments, totaling 13.1 miles, occur within or adjacent to this area. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain their outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 5.1			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
Shavers Fork	Recreational	Scenery, Recreation	9.8
Williams River	Recreational	Scenery, Recreation	1.5
Dry Fork	Recreational	Recreation	1.8

Desired Conditions

Visitors can find outstanding opportunities for semi-primitive and unconfined recreation, including exploration, solitude, risk, and challenge. The area is primarily affected by the forces of nature, with human imprint substantially unnoticeable. Native terrestrial and aquatic communities are emphasized.

The area provides a diversity of habitats for wildlife species, as well as abundant remote habitat for species that are sensitive to disturbance. Management activities are typically extremely low to non-existent. Age class distribution is moving toward dominance by late successional stands where gaps form from natural disturbances as trees age.

There are no system roads open to the public, although infrequent administrative motorized use may occur. Facilities, if they occur, are minimal and of a primitive nature. Special uses do not detract from the SPNM setting.

The areas provide abundant opportunities for semi-primitive non-motorized recreation, including hiking, horseback riding, mountain biking, photography, hunting, fishing, and wildlife viewing. All of the areas are managed for a SPNM setting. Very High scenic integrity is maintained throughout the areas.

Management Direction for 5.1 – Recommended Wilderness		
Type	**Number**	**Direction Description**
1590 – Search and Rescue		
Standard	5101	Motorized and mechanized equipment may be used for search and rescue operations.
1900 – Vegetation		
Standard	5102	No programmed commercial timber harvest shall occur. However, vegetation may be treated for the following reasons: a) To maintain or enhance public safety consistent with the degree of risk posed by SPNM areas b) To help control insect or disease outbreaks c) To salvage or restore areas extensively damaged by natural phenomena such as insects, disease, wind or ice/snow storms, and fire
Standard	5103	No timber stand improvement is allowed.
Standard	5104	Vegetation management shall not be used to create vistas or alter the natural environment. Vegetation management may be used to rehabilitate and maintain trails or recreation use sites. Chainsaws and brush-clearing power tools are allowed. Revegetation activities must use native vegetation.
Guideline	5105	Vegetation management may occur as a component of actions needed to protect adjacent lands from fire, non-native invasive species, pest, or pathogen damage.
2200 – Range		
Standard	5106	Livestock grazing may continue where it is currently permitted. No new range allotments shall be established in these areas while they are under this prescription.
2350 – Recreation: General Forest Areas		
Goal	5107	Recreation uses are consistent with maintaining wilderness attributes.
Standard	5108	Camp stoves are recommended for cooking. Wood fires for cooking or warming may be permitted unless prohibited to protect resource values. Only dead and down wood may be used for fuel wood.
Standard	5109	Facilities shall not be provided for the comfort or convenience of users. Facilities such as fire rings, pit toilets, and graveled surfaces may be provided where needed for resource protection. Facility design must be consistent with the desired ROS setting.
Guideline	5110	Mechanized trail construction equipment may be used. Trail construction should be of a more primitive standard than most areas on the Forest, so as to provide a more challenging recreation experience for the visitor. This challenge should be tempered, however, with adequate resource protection and reasonable precautions for visitor safety. For example, trail bridges are normally regarded as a convenience and not provided, but may be provided for safety or resource protection reasons.
Guideline	5111	Trail density should average between 0.0 and 2.0 miles per square mile.
Guideline	5112	Trails are maintained primarily for resource protection. A range of trail maintenance levels can occur, depending on the amount of trail use and needed resource protection measures. Hand tools, chainsaws, and brush-clearing power tools may be used. Approved cooperative trail maintenance programs should continue.

Management Direction for 5.1 – Recommended Wilderness		
Type	**Number**	**Direction Description**
Guideline	5113	Appropriate uses may include, but are not limited to hiking, backpacking, camping, nature study and research, bicycling, mountain climbing, horseback riding, fishing, hunting, and cross-country skiing.
2360 - Special Interest Areas		
Standard	5114	Cultural resources may be evaluated as needed, and may be stabilized and preserved if historically significant.
Guideline	5115	On-site cultural resources interpretation should generally not occur.
2380 – Scenery Management		
Standard	5116	Management activities shall meet the scenery integrity level of high or very high.
Guideline	5117	Structures and remnants of facilities—such as old railroad ties, culverts, or bridges—may be present. No intensive project to remove such features is needed, but they may be phased out as the opportunity presents itself. Removal is regarded as a suitable project for volunteers.
2410 – Timber Resource Management Planning		
Standard	5118	Programmed commercial timber harvest is not allowed.
2430 - Other Than Commercial Sales		
Standard	5119	Gathering firewood for home or commercial use is not allowed.
2500 – Water and Soil		
Guideline	5120	Watershed improvement or restoration may occur for the purpose of reducing soil erosion and improving surface and ground water quality. Watershed improvement projects should be designed to blend in with the natural environment and the desired ROS setting.
Guideline	5121	Trail construction should be located and designed to minimize soil disturbance.
Guideline	5122	Water quality should be maintained by ecological processes except: a) Where influenced by water treatment facilities located outside area boundaries, b) To correct problems caused by people, or c) To correct problems caused by natural events that threaten downstream health or safety.
2600 – Wildlife Management		
Standard	5123	New wildlife habitat improvements are allowed if they: a) Are compatible with the desired ROS setting, b) Can be built and maintained without additional system roads, and c) Are needed for ecosystem restoration or TEP or RFSS wildlife species habitat needs.
Guideline	5124	Maintenance of existing wildlife habitat improvements may continue.
2630 - Fish Habitat		
Standard	5125	Activities to improve fish habitat are allowed but must be consistent with the desired ROS setting and SMS integrity level.
Standard	5126	Materials for fish habitat improvement shall be from on-site sources and be designed to blend in with the surrounding environment. Log structures shall be one log high. No concrete or gabions are allowed.
Standard	5127	No new recreational fishing impoundments are allowed.
Standard	5128	Addition of limestone fines to improve water quality and fish habitat shall only be allowed where existing roads provide access, or through delivery by other feasible means consistent with the desired ROS setting.
2700 – Special Uses		
Standard	5129	Existing corridors for reservoirs, water conservation works, power projects, transmission lines, and other facilities may be used, but no new corridors shall be developed except for the exercise of prior and/or private rights.
Guideline	5130	Non-recreation special use permits should not detract from the desired ROS setting.

Management Direction for 5.1 – Recommended Wilderness		
Type	**Number**	**Direction Description**
Guideline	5131	Recreation special use permits, including outfitter guide operations, should provide SPNM opportunities or at least be consistent with the desired ROS setting.
2800 – Minerals		
Standard	5132	Federal oil, gas, and coal leases may only be issued if subject to a stipulation that prohibits surface occupancy.
Guideline	5133	Coordinate private operations and mitigation measures to the extent allowed by deed and law in order to minimize adverse effects on wilderness attributes.
Guideline	5134	Extra restrictions, such as timing of operations, may be needed to minimize impacts inconsistent with the desired ROS setting or to limit disturbance to wildlife.
3400 – Integrated Pest Management		
Guideline	5135	Insects and diseases may be controlled to maintain wilderness attributes, and protect adjacent land values and landowner safety. Integrated Pest Management methods should be used to minimize or prevent the development of pest or pathogen problems. Where problems are unavoidable, a solution should be selected that provides the most beneficial method based on effectiveness, safety, environmental protection, and cost.
5100 – Fire		
Standard	5136	Wildfires shall typically be suppressed.
Guideline	5137	Motorized and mechanized equipment and vehicles may be used for suppression activities, although hand tools and low impact techniques are preferred. Bulldozers and other heavy earth-moving equipment should not be used unless necessary to protect the lives or property of adjacent landowners.
Guideline	5138	Prescribed fire may be used to help restore or maintain fire-dependent ecosystems, wildlife openings, or range allotments.
5400 – Land Ownership		
Standard	5139	Lands allotted to this prescription shall not be candidates for exchange.
7160 – Signs		
Guideline	5140	Trail signs and blazing may be provided, but they should be kept to the minimum needed for visitor safety or resource protection.
7300 – Buildings and Structures		
Standard	5141	No buildings or structures shall be constructed, except as required by outstanding or reserved rights. Existing shelters are allowed.
7710 - Transportation System Planning		
Goal	5142	Reduce existing roads through any one or combination of the following strategies: a) Decommission roads where they are no longer needed for management/access, b) Restore roads to productivity where needed, c) Convert roads to trails and/or linear wildlife openings, or d) Allow roads to return to productivity and natural appearance on their own.
Standard	5143	No new roads shall be constructed except as required or allowed by statute, outstanding or reserved rights, or existing permits, leases, or contracts.
Standard	5144	Roads that are constructed for exceptions listed in Standard 5143 shall be built to the minimum standard needed to protect other resources and provide for user safety, and shall normally be decommissioned and rehabilitated at the end of operations or need.
Standard	5145	Existing authorized roads shall be closed to public motorized use. Infrequent administrative use may occur, and motorized use by permittees, lessees, contactors, and cooperators may be authorized with appropriate controls and limitations.
Guideline	5146	Existing authorized roads may be maintained to provide for necessary administrative and authorized access.

Management Prescription 6.1 - Wildlife Habitat Emphasis

Management Emphasis

This management prescription is designed to use vegetation management to enhance the variety of wildlife habitat on the Forest. Improvement includes favoring tree species and forest communities that are beneficial to wildlife, as well as increasing stand age class distribution over current conditions. This prescription also focuses on restoration and management of fire-adapted oak-pine and oak-hickory communities. These communities have been altered from their former extent, composition, and structure, primarily due to fire suppression, a disruption in fire cycles, and an increase in shade-tolerant and fire-intolerant species such as red maple.

This prescription emphasizes the following:

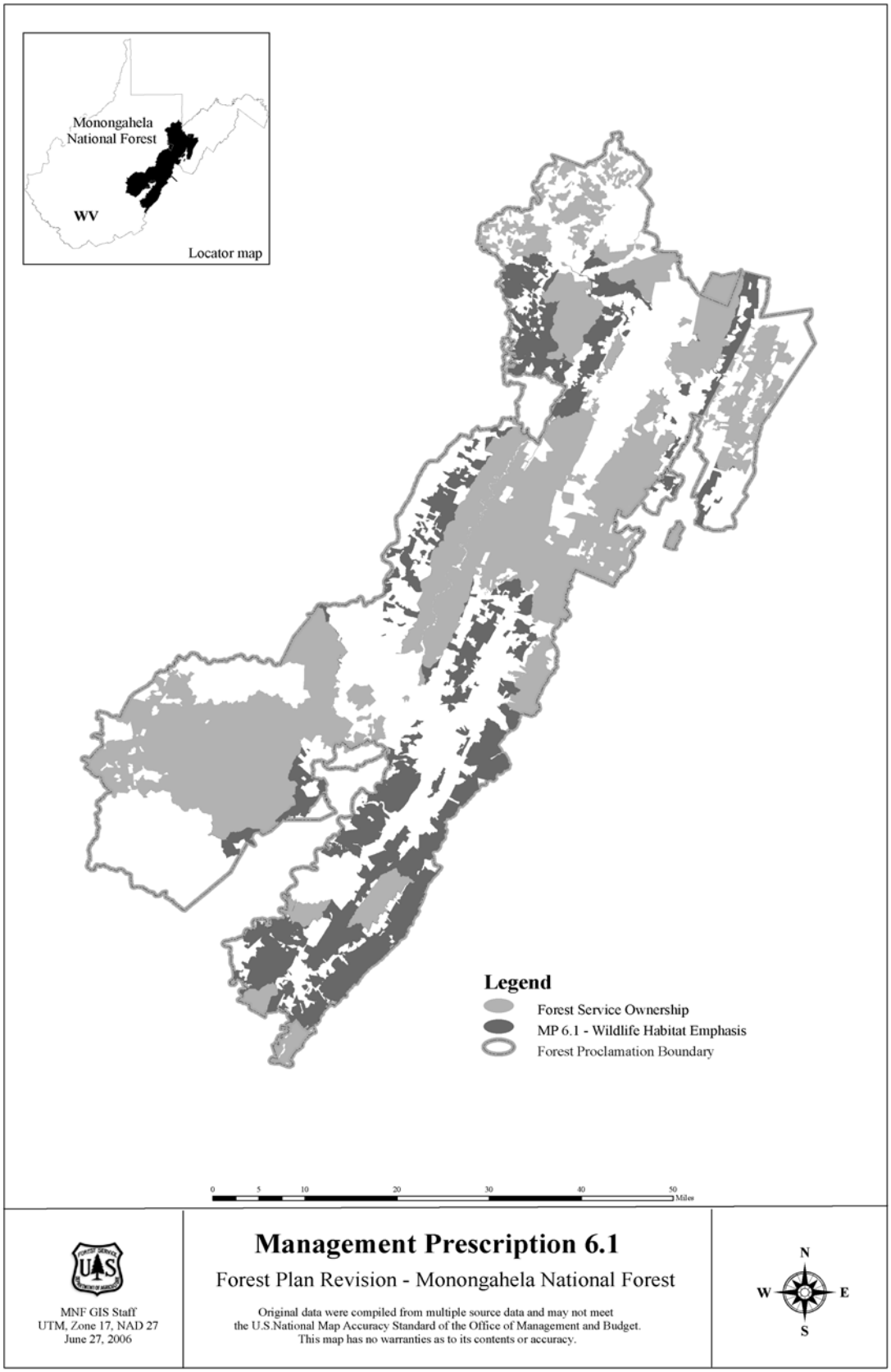
- A vegetation management strategy that emphasizes sustainable production of mast and other plant species that benefit wildlife.
- Active restoration of pine-oak and oak-hickory communities.
- Restricted motorized access and a network of security areas that reduce disturbance to wildlife.
- A primarily non-motorized recreational setting.
- A mix of forest products.

Area Description

Lands assigned to this prescription comprise a total of 277,600 acres, 30.3% of the entire Forest (Figure 3-5). Elevations range from around 1,500 to 4,500 feet, and these areas occur on a wide variety of land and soil types. This prescription area includes fire-dependent and fire-adapted ecosystems on the Forest. Fire return intervals for the natural fire regimes are estimated at 7-15 years for many oak communities. Oak communities are most widespread in xeric and dry-mesic situations on the eastern side of the Forest, but other areas of oak dominance occur on southerly and westerly aspects throughout the Forest. White pine share dominance with oaks on some dry-mesic sites in the southeastern part of the Forest. Other areas in this prescription are dominated by mixed cove and northern hardwoods. The major forest communities and their current age classes are depicted in the table below. Openings presently account for about 1 to 2 percent of vegetation conditions.

Current Vegetation Conditions in Management Prescription 6.1

Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	0.4	6.0	3.3	33.5	51.6	5.6
Northern Hardwoods	3.9	2.4	2.6	32.6	60.1	2.3
Mixed Cove Hardwoods	25.9	3.9	5.8	23.3	64.0	3.0
Mixed Oak	54.8	4.1	3.9	21.7	62.4	7.9
Pine-Oak	13.7	2.7	8.6	29.6	52.8	6.3


Monongahela
National Forest
WV
Locator map
Legend
Forest Service Ownership
MP 6.1 - Wildlife Habitat Emphasis
Forest Proclamation Boundary
0 5 10 20 30 40 50
Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 6.1
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

For this prescription area, oak types comprise over two thirds of the stands. Oak restoration and mast production are important management objectives. For this reason, the vegetation has been aggregated into similar mast-producing groups, as seen in the table below.

Current Vegetation Conditions in Management Prescription 6.1						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
White Oak Group	20	3	7	24	59	7
Red Oak Group	27	4	3	21	65	7
Mixed Oak Group	24	4	5	25	61	6
Black Cherry Group	27	3	5	26	63	4

White Oak Group = white and chestnut oaks Red Oak Group = northern red, scarlet, and black oaks
Mixed White and Red Oak Group = chestnut and red oaks
Black Cherry Group = mixed and northern hardwoods without oaks; hardwood/conifer stands with cherry potential
The Pine-Oak group has been incorporated into the oak groups according to the dominant oak species

Because this prescription covers such a large expanse of land and diversity of landforms and vegetation types, most species and habitats of wildlife, fish, and plants on the Forest are represented within it. For these same reasons, a wide variety of rare flora and fauna, and non-native invasive species are also found within this prescription. There are 13 range allotments located in the area, comprising an estimated 702 acres.

An estimated 78,200 acres (27%) of the prescription area are in Fire Regime 1, Condition Class 3, and 96,200 acres (34%) are in Fire Regime III, Condition Class 2. These areas represent the best opportunity to use prescribed fire and timber management to reduce fuels and restore natural habitat structure and stand density, species composition, and disturbance regimes.

There are an estimated 136 miles of Forest System Level 3, 4, and 5 roads in this prescription, creating an average open road density of 0.3 miles per square mile. An estimated 19,030 acres of regeneration and thinning harvest activities have occurred since the 1986 Forest Plan was signed.

There are also an estimated 179 miles of trails in this prescription area. Roughly 6% of the area has a Semi-Primitive Non-motorized (SPNM) ROS setting, 39% is Semi-Primitive Motorized, 54% is Roaded Natural, and 1% is Rural. Non-motorized recreation is currently featured, including hiking, camping, mountain biking, horseback riding, hunting, fishing, and wildlife viewing. A number of visually sensitive viewpoints and travel ways occur within or adjacent to the prescription areas.

An estimated 29% of the prescription area has privately owned mineral rights. There are 9 gas wells and 18.2 miles of gas pipeline. There are 6.4 miles of other utility corridors in this prescription area, and 7 communication or electronic sites, including 3 Forest repeater sites.

There are an estimated 71 miles of currently listed 303(d) impaired streams within the area, including all or portions of Buffalo Run, Dry Fork, Greenbrier River, Jordan Run, Laurel Run, Meadow Creek, Shavers Fork, Shock Run, Tygart Valley River, and Williams River.

Portions of six eligible Wild and Scenic River segments occur within this prescription area, totaling 51.4 miles. Parts of Shavers Fork, Dry Fork, and Blackwater River are not actually on NFS lands, but the 0.25 mile corridors on either side of the stream extend onto NFS lands. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain their outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 6.1			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
Blackwater River	Scenic	Scenery, Recreation	4.3
Shavers Fork	Scenic	Scenery, Recreation	17.0
Dry Fork	Recreational	Recreation	3.0
Glady Fork	Recreational	Recreation	4.3
Glady Fork	Scenic	Recreation	15.1
Glady Fork	Wild	Recreation	7.7

Desired Conditions

The area provides a diversity of habitats for wildlife species, as well as abundant security areas to provide habitat for local wildlife populations that are sensitive to disturbance. On sites where existing vegetation includes an oak component, oak restoration management focuses on achieving and maintaining oak-dominated species composition, as well as developing the more open stand structure that likely existed in these communities prior to a period of extensive fire suppression that began about 70-80 years ago. Where the pine component is being lost from mixed pine-oak stands, management seeks to maintain or enhance the mixed pine-oak species composition. Management activities result in relatively high levels of sustainable mast production in important species such as oak, hickory, and black cherry. These activities contribute to the long-term sustained yield of timber products. Age class distribution ranges from openings maintained for wildlife habitat to a network of late successional stands, but the predominant age class is represented by mid successional and mid-late successional stands that feature sustainable mast production. The table below shows desired age class distributions for those portions of the prescription that are considered suitable timber land.

Forest Community	Desired Vegetation Conditions in Management Prescription 6.1				
	Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-119 years)**	**Late Successional (≥120 years)**
Conifer	15-20%	15-20%	30-40%	20-30%	8-12%
Northern Hardwoods	15-20%	15-20%	30-40%	20-30%	5-10%
Mixed Cove Hardwoods	15-20%	15-20%	30-40%	20-30%	5-10%
Mixed Oak	10-15%	10-15%	25-35%	20-30%	15-20%
Pine-Oak	15-20%	15-20%	25-35%	20-30%	10-15%

Desired conditions related to oak restoration in the oak groups are given in the table below.

Desired Vegetation Conditions for Oak and Black Cherry Groups in MP 6.1					
Forest Community	**Percent by Age Class for Each Community**				
	Early Successional (0-19 years)	**Early-Mid Successional (20-39 years)**	**Mid Successional (40-79 years)**	**Mid-Late Successional (80-120 yrs)**	**Late Successional (>120 years)**
White Oak Group	8-12%	8-12%	15-25%	15-25%	35-45%
Red Oak Group	15-20%	15-20%	30-40%	30-40%	5-10%
Mixed Oak Group	10-15%	10-15%	20-30%	20-30%	15-25%
Black Cherry Group	15-25%	15-25%	35-45%	15-25%	5-10%

Roughly 3 to 8 percent of the prescription area units are in maintained or natural openings, including meadows, fields, shrub and brush fields, savannahs, grazing allotments, seeded log landings and logging roads, mine reclamations, utility corridors, and natural disturbance gaps.

An estimated 33 percent of MP 6.1 is comprised of Indiana bat primary range. Indiana bat primary range is not considered suitable timber land because Forest-wide management direction for primary range emphasizes maintenance and improvement of Indiana bat habitat. Management for Indiana bat habitat focuses on developing older stands with large trees, creating canopy gaps through thinning and uneven-aged harvesting, and providing abundant snags. Extensive even-aged management to create age class diversity is not emphasized in primary range; therefore, the portions of this prescription in primary range are developing a large component of late successional forest over time.

A system of roads and trails provides access within the area for administrative and management purposes, including transportation of forest products. Non-motorized recreation opportunities are featured and public motorized vehicle use is generally restricted. Where roads are temporarily open, motorized opportunities are available. Road densities vary considerably but average within 1.5 to 2.5 miles per square mile. Open road densities are considerably lower, averaging 0.2 to 0.8 miles per square mile, to reduce disturbance to wildlife. New collector and local roads are typically gated or closed by barricade. Many roads are seeded and managed for wildlife habitat and travel routes.

Trails and closed roads provide abundant opportunities for semi-primitive non-motorized recreation, including hiking, camping, mountain biking, hunting, fishing, and wildlife viewing. The area is managed for a combination of ROS settings (SPNM, SPM, RN). High scenic integrity is maintained along visually sensitive viewpoints and travel ways.

Special uses and facilities such as utility corridors are compatible with minimizing disturbance to wildlife populations and the ROS settings for the area.

Management Direction for 6.1 – Wildlife Habitat Emphasis		
Type	**Number**	**Direction Description**
1900 - Vegetation		
Goal	6101	Enhance diversity of wildlife habitat by managing for a variety of vegetation species, types, and age classes.

Management Direction for 6.1 – Wildlife Habitat Emphasis		
Type	**Number**	**Direction Description**
Goal	6102	Maintain, restore, or enhance the oak component within oak-pine and oak-hickory communities to provide long-term mast supplies, sustainable timber, and habitat diversity. Maintain or enhance the pine component in pine and mixed pine-oak stands.
Goal	6103	Work with Fernow Research Work Unit of Northeast Research Station, academia, or State and Private Researchers on designing and monitoring oak restoration efforts.
Objective	6104	Within oak ecosystems that can be restored, enhanced, or maintained, conduct 10,000 to 15,000 acres of prescribed fire over the next 10 years to enhance species composition and stand structure.
Objective	6105	Over the next 10 years regenerate an estimated 2,000 to 5,000 acres of mixed and northern hardwoods to begin moving toward desired age class and habitat diversity conditions.
Objective	6106	Over the next 10 years regenerate the following amounts of forest vegetation to begin moving toward desired age class and habitat diversity conditions for these forest types: White oak: 700 to 1,200 acres Red oak: 2,000 to 4,000 acres Mixed oak: 1,000 to 3,000 acres
Standard	6107	Maintain culls and snags to provide for wildlife habitat. Manage culls to provide dens and future snags. If non-commercial and in excess of wildlife needs, culls may be girdled to produce snags. When thinning or implementing other vegetation management, retain at least 5 culls per acre, if available. Retain culls and all snags except as noted below. a) Snags and culls may be removed when they are public safety hazards along roads, trails, or established campsites, or safety hazards in harvest units. b) Snags and culls may be removed for scenery management purposes in locations of very high or high scenic integrity such as in a vista or in the immediate foreground of a road open for public motor vehicle travel. c) See also snag and cull direction in TEP Species section for those areas that intersect with Indiana bat habitat.
Guideline	6108	Grapevines should not be controlled unless necessary to achieve wildlife habitat objectives. Grapevine control needs should be evaluated at the project level.
Guideline	6109	Camphor vines should be controlled when needed to ensure adequate stocking of desirable species.
Guideline	6110	Oak species should be restored, maintained, or enhanced in stands where existing natural vegetation includes an oak component and or there is some oak present in the overstory or understory within or adjacent to the stand. Final overstory removal should not normally be conducted in stands without adequate advance reproduction of oak or sprouting potential.
2200 – Range		
Goal	6111	Provide for low to moderate levels of grazing in established allotments. Maintain adequate mixtures of grass species suitable for supporting livestock through the grazing season.
Standard	6112	Grazing allotments shall be fenced, including division fences to allow rotational grazing. Barbed or electric fences are allowed, but wooden rail fences are preferred. Woven wire shall not be used in new fences.
Standard	6113	Planting non-native forage plants is prohibited without a project-level analysis.
Guideline	6114	Ponds, water troughs, pipes, salt boxes, gravelling around troughs and similar developments may be used, but landscaping materials and location should be chosen to blend in with the natural environment.
Guideline	6115	Mowing practices should judiciously leave clumps of shrubs, shrubs along stream courses and wet areas, along woodland borders, steep slopes, rocky or rough areas, and sites needed for diversity and edge effect.
2310 – Recreation System Planning		
Goal	6116	Feature primarily non-motorized recreation opportunities, but maintain motorized opportunities on major travelways where they currently exist.

Management Direction for 6.1 – Wildlife Habitat Emphasis		
Type	**Number**	**Direction Description**
2350 – Recreation: General Forest Areas		
Standard	6117	Trail management shall be compatible with the ROS setting of the area.
Guideline	6118	New trail construction should not cause trail density in the prescription unit to exceed two miles per square mile. This guideline does not apply to existing trail relocation.
Guideline	6119	Selected areas, trails, or roads may be open, where appropriate, to motorized vehicles during specific periods for specific purposes such as firewood access, hunter distribution, emergencies, or administrative use. Travelways should normally be closed to public motorized vehicles from April 15 to August 1 to reduce disturbance to wildlife.
Guideline	6120	In areas where oak restoration is emphasized, work with WVDNR to facilitate hunter access during deer season.
2380 – Scenery Management		
Guideline	6121	Natural-appearing materials should be used to build and maintain trails and recreation facilities.
2410 - Timber Resource Management Planning		
Standard	6122	No more than 40 percent of forested NFS lands within each 6.1 prescription area unit shall be harvested over a 10-year period. Thus, at least 60 percent of each unit shall provide security areas for wildlife during the 10-year period.
Standard	6123	Unforeseen activities, such as timber salvage or pipeline installation, shall be counted toward the 40 percent disturbance standard above.
Guideline	6124	The prescription area may be entered every year for ecological restoration or silvicultural treatments, based on the consideration of multiple resources.
2430 - Other Than Commercial Sales		
Standard	6125	Firewood: a) Personal use or marked firewood sales may be cut anytime during the year along Forest roads open to the public. b) Firewood cutting may be permitted following the closure of the timber sale unit. In these areas, cutting may only occur during the period August 2 to October 31 and January 1 to April 14. Sale area roads shall be posted as needed to help avoid conflicts with hunters and other recreationists. c) Along roads that are normally closed, green firewood sales may be made available during the period January 1 to April 14 and August 2 to October 31. Sale area roads shall be posted as needed to help avoid conflicts with hunters and other recreationists. d) Firewood permittees or assistants are not allowed to hunt when given access to gather firewood behind closed gates.
Guideline	6126	Firewood sales should be managed so that disturbance is minimized during critical habitat periods such as turkey brood season.
2470 - Silvicultural Systems		
Guideline	6127	Emphasize use of the even-aged silvicultural system to improve or maintain wildlife habitat diversity.
Guideline	6128	In areas where oak restoration, enhancement, or maintenance is practiced, silvicultural treatments, including prescribed fire, should be designed to achieve oak regeneration or to maintain oak dominance of the site. Active management should not seek to convert oak-pine or oak-hickory stands to conifer.
Guideline	6129	On sites where mast-producing tree species normally occur, oaks or other site-appropriate mast-producing tree species should be planted if natural regeneration does not provide an adequate future mast source.
Guideline	6130	In areas where oak restoration, enhancement, or maintenance is practiced, even-aged and stand improvement cuts are the preferred silvicultural treatments. a) Two-age harvest and group selection methods are preferred when the objective is oak

Management Direction for 6.1 – Wildlife Habitat Emphasis		
Type	**Number**	**Direction Description**
		ecosystem restoration, enhancement, or maintenance. b) Even-aged harvests and/or prescribed fire may be used to mimic medium to large disturbance events. c) Group selection may be used where deer browsing on regeneration is not a concern. d) Thinning in oak stands should leave at least 65 percent of the existing basal area and should leave trees capable of producing relatively stable supplies of mast. e) Restoration or enhancement treatments may be implemented at any stand age.
Guideline	6131	When designing even-age regeneration areas retain a one-third acre clump of trees or shrubs for each five to eight acres of regeneration cutting. Where possible, clumps should include retained culls or snags. Channel buffers may be counted toward this guideline where the configuration allows them to serve both purposes.
2470 - Timber Stand Improvement and Reforestation		
Goal	6132	Maintain, restore, or enhance mast-producing trees and habitat diversity.
Guideline	6133	Non-merchantable stems greater than 1” dbh should be cut in regeneration areas. Exceptions may include: a) Leave clump trees, b) Marked cull trees and snags, c) Trees capable of producing an adequate growth response after release, d) Shrubs beneficial to wildlife, or e) Areas where site preparation is not necessary to achieve desired regeneration.
Guideline	6134	TSI and reforestation activities should retain trees and shrubs beneficial to wildlife (e.g., dogwood, crabapple, hawthorn, witch hazel, American hazel nut, American hornbeam, and serviceberry), if available on site.
2630 – Wildlife Habitat		
Goal	6135	Maintain natural areas of standing water as wildlife watering sources. Create artificial water sources as needed in conjunction with other resource activities.
Objective	6136	Over the next 10 years treat 3,000 to 7,000 acres within Indiana bat primary range to maintain or enhance habitat.
Objective	6137	Create an annual average of 100 to 300 acres of wildlife openings.
Guideline	6138	Developed openings should be located away from open roads or main collector roads, and from active hiking and mountain biking trails. They should be accessible for maintenance and where feasible, dispersed within the prescription area.
Guideline	6139	Conifer trees may be planted or controlled where needed to maintain or enhance vegetation diversity for wildlife. Habitat management should not seek to convert conifer stands to hardwoods or eliminate the conifer component of mixed stands.
Guideline	6140	Between periods of use, local roads closed to public vehicle use should be seeded to wildlife food plants and managed as wildlife openings and hiking travel ways.
2700 – Special Uses		
Standard	6141	Utility corridors shall not be developed for or used by motorized vehicles, except for administrative use or where authorized for maintenance of the corridor.
Guideline	6142	Special uses should generally not include developed recreation facilities or rights-of-way open to public motorized use in order to reduce disturbance to wildlife.
2800 – Minerals		
Standard	6143	Extra restrictions, such as timing of operations, may be necessary in this prescription to limit disturbance to wildlife populations and to provide the semi-primitive non-motorized recreation opportunity.
Standard	6144	Exploration and development of federal minerals is allowed but is included in the 40 percent disturbance restriction in Standard 6122, above.
Guideline	6145	During turkey and deer hunting season, motorized access to federal gas wells and pipelines

Management Direction for 6.1 – Wildlife Habitat Emphasis		
Type	**Number**	**Direction Description**
		should be avoided before 11 a.m. and after 3 p.m., except during construction phases or in out-of-the-ordinary maintenance situations.
5100 – Fire		
Objective	6146	Within oak ecosystems that can be restored, enhanced, or maintained, conduct an annual average of 1,000 to 1,500 acres of prescribed fire to help control species composition and stimulate oak regeneration.
7100 - Transportation System Planning		
Guideline	6147	Road densities and impacts should be minimized to reduce disturbance in the area. a) New road construction should not cause road density within the prescription area unit to exceed 1.0 mile per square mile for collector roads, or 2.5 miles per square mile for any combination of collector and local roads. b) New collector roads should generally be gated and maintained for recurring administrative use. c) New local roads should generally be closed between projects by physical barricades. Use should be intermittent. Public motorized use should generally not occur from April 15 to August 1 to reduce disturbance to wildlife. See also Guideline 6119 and Standard 6125.

Black Bear near Cranberry Glades

Management Prescription 6.2 – Backcountry Recreation

Management Emphasis

This prescription emphasizes the following:

- A semi-primitive, non-motorized setting with opportunity for a variety of dispersed recreation activities.
- A largely natural environment, with a general lack of management-related disturbance.
- Restoration and maintenance of ecological communities and habitats, predominantly through natural processes.
- Wildlife habitat for species that benefit from a general lack of human disturbance.
- Protection of watersheds and soils.

Area Description

The following areas are assigned to this prescription:

MP 6.2 Area	Acres	MP 6.2 Area	Acres
Big Draft	5,395	Middle Mountain	12,197
Canaan Loop	7,850	Roaring Plains East	2,962
Dolly Sods North	7,215	Roaring Plains North	3,119
East Fork Greenbrier	10,153	Seneca Creek	13,001
Gaudineer	6,727	Spice Run	6,171
Gauley Mountain East	7,780	Tea Creek Mountain	8,272
Gauley Mountain West	6,624	Turkey Mountain	6,111
Lower Laurel Fork	3,177	Total Acres	106,754

Lands assigned to this prescription comprise a total of 106,800 acres in 15 separate areas, or 11.6% of the entire Forest (see MP 6.2 map). Elevations range from under 2,000 feet to over 4,700 feet, and these areas occur on a wide variety of land and soil types. The major forest communities and their current age classes are depicted in the table below. Openings presently account for about 5 to 6 percent of vegetation conditions.

The area is characterized by a predominantly natural-appearing environment where there is a moderate to high probability of solitude. Recreation opportunities generally require a high degree of self-reliance, and pose a moderate to high degree of risk. Although there may be some evidence of other land uses, there is a high probability of experiencing isolation from the sounds and sights of man. Few roads exist and little motorized use occurs. Structures are rare, but may include rustic shelters, bridges and signs, and primitive sanitary facilities.

Because this prescription covers such a large expanse of land and diversity of landforms and vegetation types, virtually every species of wildlife, fish, and plants on the Forest is represented within it. For these same reasons, a wide variety of rare flora and fauna, and non-native invasive species are also found within this prescription.

Current Vegetation Conditions in Management Prescription 6.2						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early-Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid-Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	7.7	1.3	0.0	58.8	36.2	3.7
Northern Hardwoods	23.5	0.5	1.7	46.6	49.5	1.7
Mixed Cove Hardwoods	39.7	0.3	0.7	60.7	37.8	0.5
Mixed Oak	18.1	1.4	1.6	27.1	62.6	7.3
Pine-Oak	4.9	3.1	4.5	48.3	42.2	1.9

An estimated 11,000 acres (10%) of the prescription area are considered to be in Fire Regime 1, Condition Class 3, and 15,500 acres (15%) in Fire Regime III, Condition Class 2. These areas represent the best opportunity to use prescribed fire to reduce fuels and restore natural habitat structure and stand density, species composition, and disturbance regimes.

There are no Forest System Level 3, 4, and 5 roads in this prescription area, although Level 1 and 2 roads do exist in many areas (see Appendix C to the EIS for detailed descriptions). Public motorized use is prohibited, although some authorized and administrative use occurs. Some old roads have been converted to trails or linear wildlife openings. No timber harvest activity has occurred in most of the prescription area since 1986.

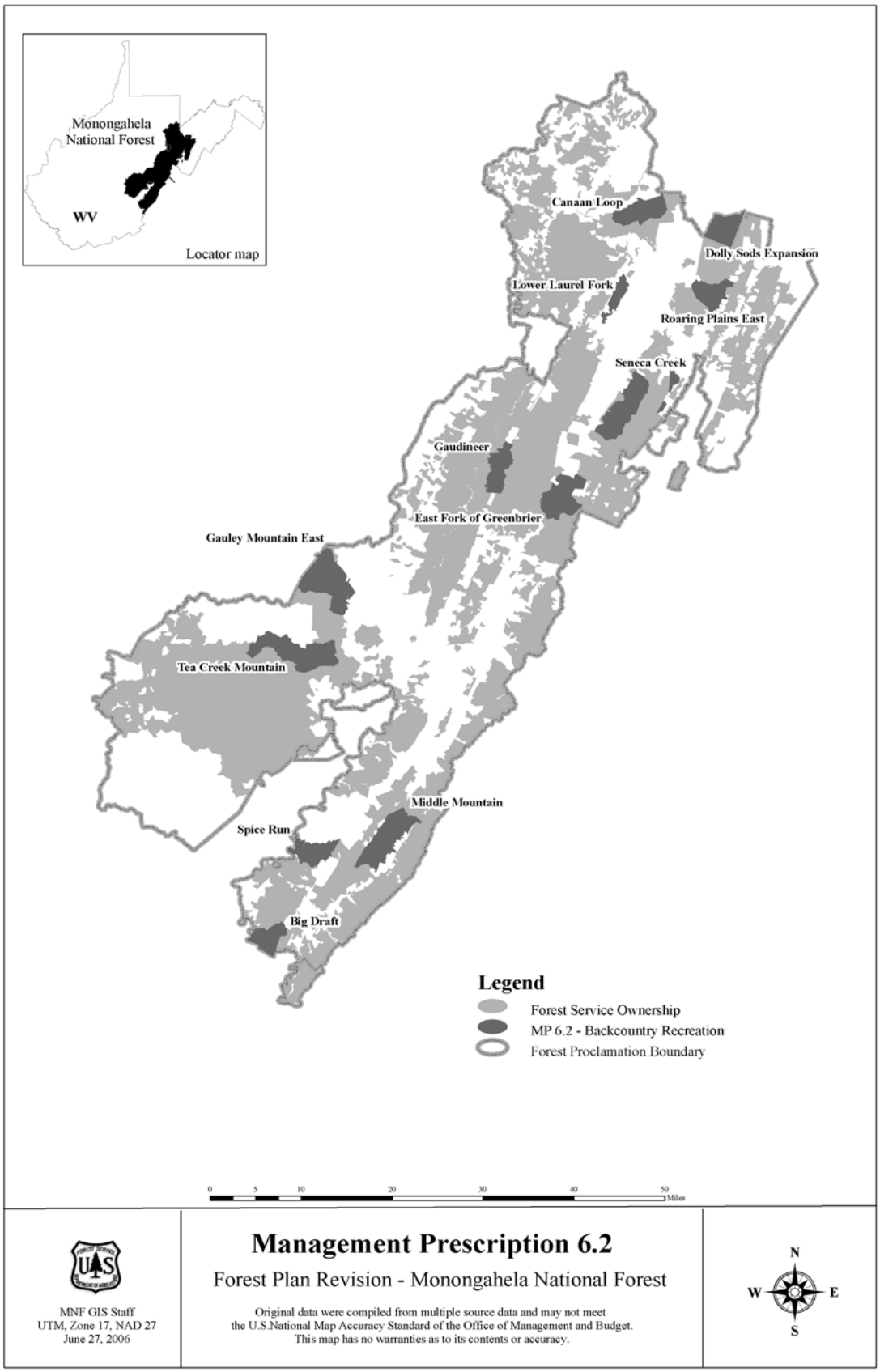
There are an estimated 160 miles of trail in this prescription area. Non-motorized recreation is currently featured, including hiking, mountain biking, hunting, horseback riding, fishing, and wildlife viewing. A number of visually sensitive viewpoints and travel ways occur within or adjacent to the prescription areas.

An estimated 50% of the total prescription area has privately owned mineral rights. There are no gas wells and no gas pipeline, although pipeline serves as the boundary for a couple of areas. There are no other utility corridors in this prescription area, and no communication or electronic sites, or range allotments.

There are an estimated 29 miles of currently listed 303(d) impaired streams within the area, including all or portions of Greenbrier River, Laurel Run, Red Creek, South Fork Red Creek, Sugar Creek, Tea Creek, and Williams River.

Portions of three eligible Wild and Scenic River segments, totaling 15.9 miles, occur within this prescription area. River miles, classification, and values are described in the table below. Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain their outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 6.2			
River Name	Classification	Outstandingly Remarkable Values	Miles
Williams River	Recreational	Scenery, Recreation	5.9
Red Creek	Scenic	Scenery, Recreation	3.4
Laurel Fork	Wild	Scenery, Recreation	6.6


Monongahela National Forest
WV
Locator map
Canaan Loop
Dolly Sods Expansion
Lower Laurel Fork
Roaring Plains East
Seneca Creek
Gaudineer
East Fork of Greenbrier
Gauley Mountain East
Tea Creek Mountain
Middle Mountain
Spice Run
Big Draft
Legend
Forest Service Ownership
MP 6.2 - Backcountry Recreation
Forest Proclamation Boundary
0 5 10 20 30 40 50 Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 6.2
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

Desired Conditions

The areas are managed to meet the physical, managerial, and social settings consistent with the Recreation Opportunity Spectrum descriptions for semi-primitive non-motorized recreation. They provide a wide variety of dispersed recreation opportunities and settings. Natural processes are the primary agents for vegetative change, with vegetation management used only to protect the resource or complement the recreational value. Recreation facilities—including bridges, signs, fire rings, shelters, and sanitation structures—are relatively uncommon and rustic in appearance.

The transportation system is closed to public motorized use. Non-motorized recreation opportunities are featured.

Trails and closed roads provide abundant opportunities for semi-primitive non-motorized recreation, including hiking, mountain biking, horseback riding, hunting, fishing, and wildlife viewing, although some restrictions may occur in order to achieve management prescription objectives. The area is managed for a SPNM ROS setting. High scenic integrity is maintained along visually sensitive viewpoints and travel ways.

In order to reflect the SPNM emphasis of this prescription, the type, amount, and intensity of management activities are limited in these areas. Restrictions on vegetation management, motorized access, and other activities are described in the management direction below.

Management Direction for 6.2 – Backcountry Recreation		
Type	**Number**	**Direction Description**
1590 – Search and Rescue		
Standard	6201	Motorized and mechanized equipment may be used for search and rescue operations.
1900 – Vegetation		
Standard	6202	No programmed commercial timber harvest shall occur. However, vegetation may be treated for the following reasons: a) To enhance dispersed recreation opportunities or settings b) To maintain or enhance public safety consistent with the degree of risk posed by SPNM areas c) To help control insect or disease outbreaks d) To salvage or restore areas extensively damaged by natural phenomena such as insects, disease, wind or ice/snow storms, and fire e) To meet the emphasis of the management area.
Standard	6203	No timber stand improvement is allowed.
Standard	6204	Vegetation management is allowed to rehabilitate and maintain trails or recreation use sites. Chainsaws and brush-clearing power tools are allowed. Revegetation activities must use native vegetation.
Standard	6205	Planting native species for the enhancement of visual quality or recreational settings is allowed.
Guideline	6206	Vegetation management may occur as a component of actions needed to protect adjacent lands from fire, non-native invasive species, pest, or pathogen damage.
Guideline	6207	Openings should constitute a minor component of the landscape, but may be maintained or developed to enhance visual and recreational settings.

Management Direction for 6.2 – Backcountry Recreation		
Type	**Number**	**Direction Description**
2200 – Range		
Goal	6208	Design and implement forage management practices to be consistent with the desired SPNM recreation settings and opportunities.
Guideline	6209	Range improvements may occur on existing allotments to provide a viable grazing opportunity and to maintain the visual and recreation benefits of the openings.
Guideline	6210	Encroaching woody vegetation and non-native invasive herbaceous species may be controlled as specified in the appropriate NEPA document.
2310 – Recreation System Planning		
Standard	6211	Recreation planning shall be consistent with the Recreation Opportunity Spectrum (ROS) settings and opportunities for semi-primitive non-motorized (SPNM).
2350 – Recreation: General Forest Areas		
Goal	6212	Provide facilities and trails that are consistent with SPNM opportunities and settings.
Guideline	6213	Recreation facilities should be relatively uncommon, and they should be designed to blend in with the natural environment.
Guideline	6214	Trail densities should not exceed 4 miles per square mile to help maintain semi-primitive opportunities. Mechanized trail construction equipment may be used.
Guideline	6215	Trails should be constructed to Trail Class I, II or III standards. Trail bridges may be used to protect resources and to provide for visitor safety consistent with the degree of risk posed by these areas. Bridge construction and design should be consistent with the SPNM setting.
Guideline	6216	Trails should be maintained to Trail Class I, II or III standards. Power and mechanical tools may be used for trail maintenance.
Guideline	6217	Appropriate uses for SPNM opportunities and settings may include, but are not limited to: hiking, backpacking, camping, nature study, bicycling, mountain climbing, horseback riding, fishing, hunting, and cross-country skiing.
2360 - Special Interest Areas		
Guideline	6218	Interpretation of remote cultural and natural resources may be allowed and should be consistent with SPNM recreation emphasis.
2380 – Scenery Management		
Standard	6219	SPNM recreation areas shall be managed consistent with the Scenery Management System Integrity Objective of High. Deviations to the Moderate Scenic Integrity Objective are allowed to maintain recreation values, provide for public safety, or to restore ecological communities or natural habitat structure.
2500 – Water and Soil		
Guideline	6220	Watershed improvement or restoration may occur to reduce soil erosion and/or to improve surface and ground water quality. Watershed improvement projects should be designed to blend in with the natural environment and the SPNM setting.
2600 – Wildlife Management		
Goal	6221	Provide habitat for native or desired non-native species of game and non-game wildlife. Manage existing openings and grasslands to enhance backcountry recreational opportunities, including wildlife viewing and hunting.
Standard	6222	New wildlife habitat improvements are only allowed if they: a) Are compatible with the SPNM recreation setting, b) Can be built and maintained without additional system roads, and c) Use native vegetation as prescribed in FW Guideline VE05.
Guideline	6223	Maintenance of existing wildlife habitat improvements may continue.
2630 - Fish Habitat		
Standard	6224	Fish management practices—such as fish stocking, stream liming, and stream habitat improvement or protection—are subject to the following constraints designed to help

Management Direction for 6.2 – Backcountry Recreation		
Type	**Number**	**Direction Description**
		practices meet the desired SPNM setting of the area. a) Trucks and other heavy equipment are allowed only in areas accessible by existing roads that are designed to accommodate this type of vehicle traffic. b) Stream structures shall be constructed from logs and rocks to blend in with the natural setting. c) Log structures shall generally be small, usually not more than 2 or 3 logs high.
Standard	6225	Structure materials shall be from an on-site or a natural-appearing source. Concrete and gabions are not allowed. Quarried rock may be allowed on a case-by-case basis.
Standard	6226	Addition of limestone fines to improve water quality and fish habitat shall only be allowed where existing roads provide access, or through delivery by other feasible means consistent with SPNM setting.
Guideline	6227	Streamside shade planting may be allowed to maintain or enhance stream temperature or to provide habitat cover.
2700 – Special Uses		
Standard	6228	Discretionary special uses shall generally not be permitted unless they are compatible with the emphasis of the area.
Guideline	6229	Non-recreation special use permits should not detract from the area's desired ROS setting.
Guideline	6230	Recreation special use permits, including outfitter guide operations, should provide SPNM opportunities or at least be consistent with the desired ROS setting.
2800 – Minerals		
Standard	6231	Federal oil, gas, and coal leases may only be issued if subject to a stipulation that prohibits surface occupancy.
Guideline	6232	Extra restrictions, such as timing of operations, may be necessary in this prescription to minimize impacts inconsistent with the SPNM setting and to limit disturbance to wildlife.
5100 – Fire		
Standard	6233	Wildfires shall typically be suppressed.
Guideline	6234	Motorized and mechanized equipment and vehicles may be used for suppression activities, although hand tools and low impact techniques are preferred.
Guideline	6235	Prescribed fire may be used to help restore or maintain fire-dependent ecosystems, wildlife openings, or range allotments.
7100 - Transportation System Planning		
Goal	6236	Reduce existing roads through any one or combination of the following strategies: a) Decommission roads where they are no longer needed for management/access, b) Restore roads to productivity where needed, c) Convert roads to trails and/or linear wildlife openings, or d) Allow roads to return to productivity and natural appearance on their own.
Standard	6237	No new roads shall be constructed except to respond to statute, or to provide access for outstanding or reserved rights, or existing permits, leases, or contracts.
Standard	6238	Roads that are constructed for exceptions listed in Standard 6237 shall be built to the minimum standard needed to protect resources and provide for user safety, and shall be decommissioned and rehabilitated at the end of operations or need.
Standard	6239	Existing roads shall be closed to public motorized use. Infrequent administrative use and use by contractors and cooperators is allowed to the extent needed to accomplish management objectives. Motorized use by permittees and lessees is allowed to the extent needed to accomplish the purpose of the permit or lease.
Guideline	6240	Existing authorized roads may be maintained or reconstructed to provide for necessary administrative and authorized access.

Management Prescription 8.0 – Special Areas

Management Emphasis

This prescription emphasizes:

- The preservation of unique ecosystems or areas for scientific or recreational purposes.
- Areas to conduct research.
- The protection of special areas of national significance.

The MP 8.0 Special Areas on the Forest have been categorized into similar groupings and are shown in the table below.

Number	Name of Area	District	Acres
8.1	Spruce Knob-Seneca Rocks National Recreation Area	Cheat-Potomac	57,200
8.2	Big Run Bog National Natural Landmark (NNL)	Cheat-Potomac	660
8.2	Shavers Mountain Spruce-Hemlock NNL	Cheat-Potomac	60
8.2, 8.4	Blister Run Swamp NNL and Botanical Area	Greenbrier	260
8.2, 8.4	Cranberry Glades NNL and Botanical Area	Gauley	780
8.2, 8.4	Fisher Spring Run Bog NNL and Botanical Area*	Cheat-Potomac	410
8.2, 8.3	Falls of Hills Creek Scenic Area and NNL	Gauley	150
8.2, 8.3	Gaudineer Scenic Area and NNL	Greenbrier	140
8.3	Dolly Sods Scenic Area	Cheat-Potomac	2,180
8.4	Bear Rocks Bog Botanical Area*	Cheat-Potomac	10
8.4	Bickle Slope Botanical Area	Cheat-Potomac	10
8.4	Big Draft Botanical Area	Marlinton-WSS	70
8.4	Black Mountain Botanical Area	Marlinton-WSS	10
8.4	Fanny Bennett Hemlock Grove	Cheat-Potomac	70
8.4	Glade Run Swamp Botanical Area	Greenbrier	60
8.4	Meadow Creek Botanical Area	Marlinton-WSS	20
8.4	Mt. Porte Crayon Botanical Area	Cheat-Potomac	390
8.4	North Fork Mountain Red Pine Botanical Area **	Cheat-Potomac	10
8.4	Rohrbaugh Plains Bog Botanical Area	Cheat-Potomac	140
8.4	Max Rothkugel Plantation	Greenbrier	150
8.4	Stuart Knob Botanical Area	Cheat-Potomac	350
8.4	Virgin White Pine Botanical Area	Marlinton-WSS	10
8.4	Whites Draft Botanical Area	Marlinton-WSS	70
8.4	Blue Rock Geological Area***	Cheat-Potomac	260
8.5	Pike Knob Candidate Research Natural Area (RNA)	Cheat-Potomac	1,950
8.5	Black Cherry Candidate RNA	Greenbrier	120
8.5	Red Spruce Candidate RNA	Greenbrier	60
8.5	Yellow Poplar Candidate RNA	Gauley	110
8.5	Fernow Experimental Forest (Research Area)	Cheat-Potomac	4,550
8.5	Loop Road Research Area	Greenbrier	800
8.6	Spruce Mountain Grouse Management Area	Cheat-Potomac	1,750
8.6	Brushy Mountain Grouse Management Area	Marlinton-WSS	6,830
		Total Acres	79,360

*Within Dolly Sods Scenic Area **Within Pike Knob Candidate NRA
***Within the NRA

Area Descriptions

The areas included in this prescription are scattered throughout the Forest and are of varying sizes (see MP 8.0 map). Their special characteristics are recognized by various administrative designations. Some areas have more than one special designation, such as the Cranberry Glades Botanical Area, which is also a National Natural Landmark and a candidate Research Natural Area. These designations have been separated into the following categories:

8.1 – Spruce Knob-Seneca Rocks National Recreation Area

This 99,900 acre NRA is divided into two units. The Spruce Knob unit comprises 27,000 acres, including 5,800 acres of private and 21,200 acres of NFS lands, and the Seneca Rocks unit, which is 72,800 acres in size, including 36,900 acres of private and 36,000 of NFS lands. The public lands are managed to provide a variety of recreation opportunities and settings. Recreation opportunities range from a high degree of development (Seneca Rocks Discovery Center and Seneca Shadows Campground) to very low development in backcountry areas, such as North Fork Mountain.

8.2 – National Natural Landmarks

The Park Service, Department of Interior, administers the Natural Landmarks Program. The objective of the program is to assist in the preservation of a variety of significant ecological and geological natural areas which, when considered together, will illustrate the diversity of the country's natural heritage. The seven current National Natural Landmarks on the Forest are: Blister Run Swamp Botanical Area, Cranberry Glades Botanical Area, Fisher Spring Run Bog Botanical Area, Falls of Hills Creek Scenic Area, Gaudineer Scenic Area, Big Run Bog, and Shavers Mountain Spruce-Hemlock area. Together they comprise an estimated 2,460 acres.

8.3 – Scenic Areas

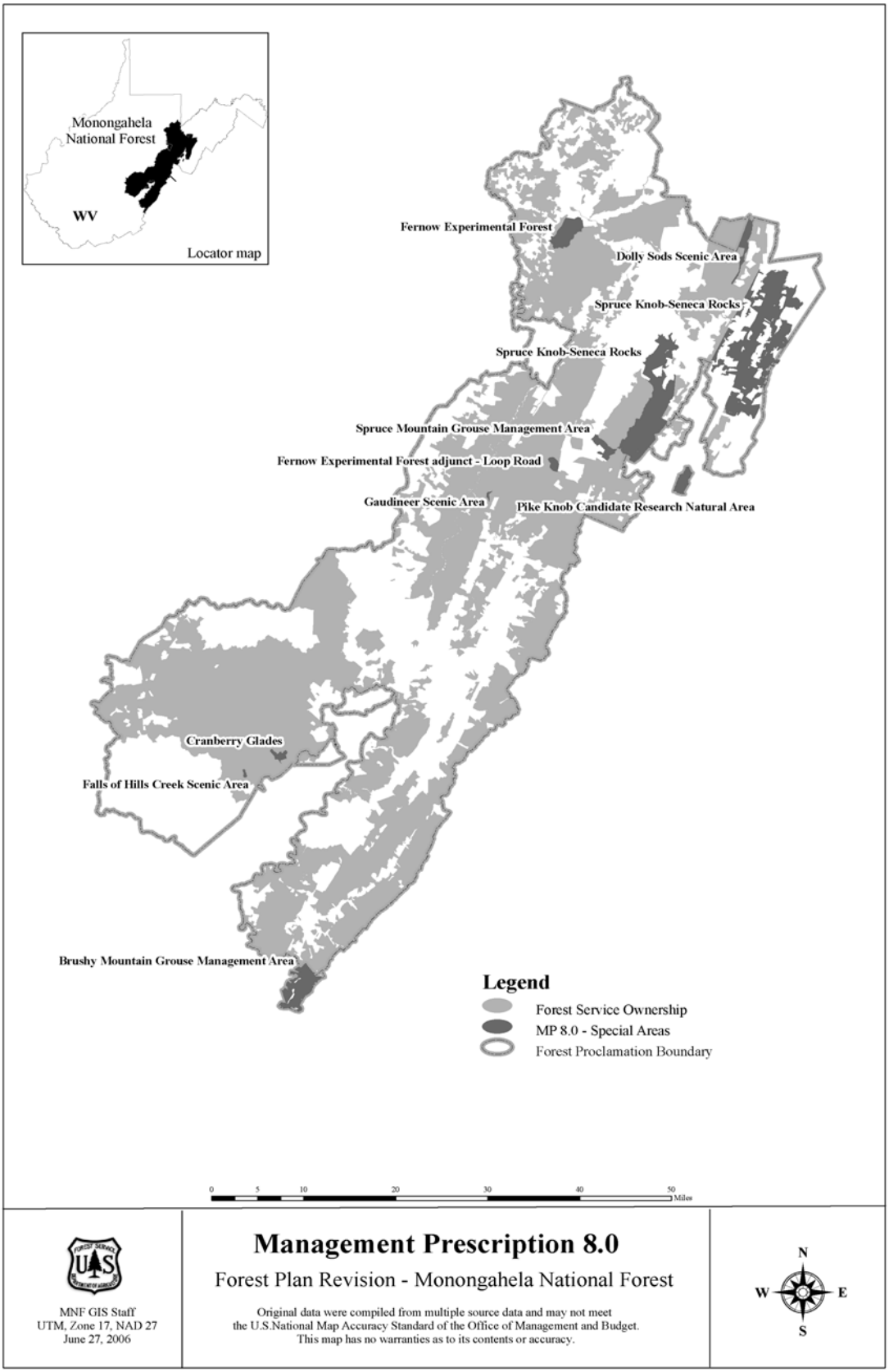
Scenic areas are places of outstanding beauty that require special management to preserve visual quality. There are currently three scenic areas on the Forest: Dolly Sods, Falls of Hills Creek, and Gaudineer. Together they comprise an estimated 2,470 acres.

8.4 – Ecological Areas

Ecological areas have been established to preserve rare ecosystems or areas to enhance biological diversity and provide for scientific or recreational activities. There are currently 17 Botanical Areas and one Geological Area on the Forest, comprising an estimated total of 3,080 acres.

Botanical Areas. Botanical areas contain specimens or groups of plants in plant communities that are significant because of the form, color, occurrence, habitat, location, life history, arrangement, ecology, environment, or variety.

Geological Area. The Blue Rock Geological Area is the only designated area on the Forest. This area is of special interest due to its high scenic quality, rare plant species, and cliff and talus habitats.


Monongahela National Forest
WV
Locator map
Fernow Experimental Forest
Dolly Sods Scenic Area
Spruce Knob-Seneca Rocks
Spruce Knob-Seneca Rocks
Spruce Mountain Grouse Management Area
Fernow Experimental Forest adjunct - Loop Road
Gaudineer Scenic Area
Pike Knob Candidate Research Natural Area
Cranberry Glades
Falls of Hills Creek Scenic Area
Brushy Mountain Grouse Management Area
Legend
Forest Service Ownership
MP 8.0 - Special Areas
Forest Proclamation Boundary
0 5 10 20 30 40 50 Miles
MNF GIS Staff
UTM, Zone 17, NAD 27
June 27, 2006
Management Prescription 8.0
Forest Plan Revision - Monongahela National Forest
Original data were compiled from multiple source data and may not meet
the U.S.National Map Accuracy Standard of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.
N
W
E
S

8.5 – Research Areas

These are areas on the Forest set aside for research purposes. They include the candidate Research Natural Areas (RNAs) and the Fernow Experimental Forest. RNAs represent distinct combinations of subsection and natural community alliances. All of the recommended or candidate RNAs on the Forest have establishment reports, but none have been designated as RNAs. Additional documentation through the NEPA process is needed to support designation of RNAs. The candidate RNAs comprise a total of 2,240 acres.

The Fernow Experimental Forest, an estimated 4,600 acres, is managed to conduct research activities. The Fernow was formally mandated in 1934 to be made "permanently available for forest research and the demonstration of its results".

8.6 – Grouse Management Areas

There are currently two Grouse Management Areas on the Forest, one southwest of Spruce Knob Lake, and one in the southeast corner of the Forest. They are managed to create and maintain habitat suitable for ruffed grouse. These areas are considered to be in the suited timber base, and together they comprise an estimated 8,570 acres.

Desired Conditions

Special Areas retain the values and qualities for which they were originally designated. Areas contribute to the diversity of the Forest by preserving rare species, communities, habitats, and features. These areas also provide opportunities for scientific research and public enjoyment.

Management Direction

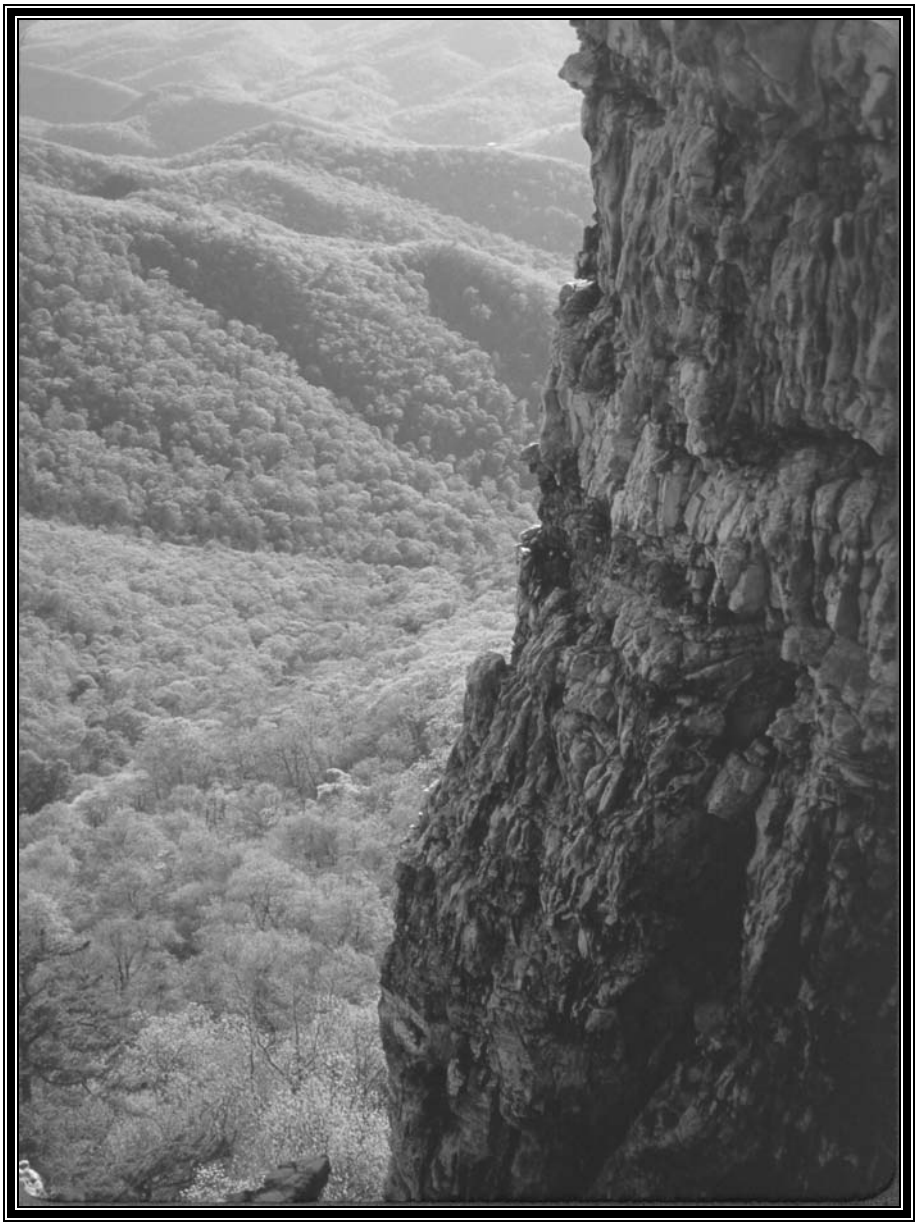
Management direction for special areas includes Forest-wide Management Direction, the General Management Direction in the table below, and the area-specific direction that follows this table.

General Management Direction for MP 8.0 - Special Areas		
Type	**Number**	**Direction Description**
1900 - Vegetation		
Standard	8001	The purpose of any vegetation treatment must be to protect or enhance the special values of these sites or contribute to research programs. Any silvicultural practice may be used for these purposes.
Guideline	8002	The frequency of entry to a stand and the proportion of an area operated at one time should be based on the management emphasis and objectives of the specific area.
Guideline	8003	Age and size class desired conditions should be defined by the Vegetation Management Plan for the area, if applicable.
Guideline	8004	Vegetation management may occur as a component of actions needed to protect special areas and adjacent lands from fire, non-native invasive species, pest, or pathogen damage.
2200 – Range		
Standard	8005	Forage management shall not adversely affect the overall values and qualities for which the special area was established.
2310 – Recreation System Planning		
Guideline	8006	ROS classes should be consistent with the management emphasis and direction of each

General Management Direction for MP 8.0 - Special Areas		
Type	**Number**	**Direction Description**
		special area.
2350 – Recreation: General Forest Areas		
Guideline	8007	Trails should be consistent with the special area management emphasis and direction.
2360 - Special Interest Areas		
Guideline	8008	Cultural resources interpretation should be consistent with the management emphasis and direction of each special area.
2380 – Scenery Management		
Guideline	8009	Scenic Integrity Objectives should be consistent with the management emphasis and direction of each special area.
2500 – Water and Soil		
Goal	8010	Maintain acidic conditions where they are essential to the ecosystem.
Standard	8011	Activities to rehabilitate human-caused erosion and sedimentation are allowed.
Standard	8012	Materials for erosion and sedimentation control shall be from on-site sources and be designed to blend in with the surrounding environment.
2600 – Wildlife Management		
Guideline	8013	Wildlife habitat management should be consistent with the management emphasis and direction of each special area.
2630 - Fish Habitat		
Standard	8014	Activities to improve fish habitat are allowed.
Standard	8015	Materials for fish habitat improvements shall be from on-site sources and be designed to blend in with the surrounding environment. Log structures shall be one log high. No concrete or gabions are allowed.
Standard	8016	No new recreational fishing impoundments are allowed.
Standard	8017	Limestone Rotary Drums are not allowed. Addition of limestone fines is allowed where consistent with the management emphasis of the area.
2700 – Special Uses		
Standard	8018	Special uses may be authorized as long as they do not adversely affect the overall values and qualities for which the special area was established.
2800 – Minerals		
Standard	8019	Surface-disturbing exploration (including core-drilling) and development are allowed as long as they do not adversely affect the overall values and qualities for which the special area was established.
5100 – Fire		
Guideline	8020	Prescribed fire may be used to establish, maintain, or restore vegetation.
5400 – Land Ownership		
Standard	8021	Lands in this prescription shall not be conveyed or exchanged unless: a) The transaction would be in the public's and agency's interest, and b) The land is not required to protect or maintain the values for which the area was created.
7100 - Transportation System Planning		
Goal	8022	Provide a transportation system that meets the needs of each special area on a case-by-case basis.
7730 – Transportation System Operation		
Guideline	8023	Roads may be closed to public use or restricted by vehicle type or season of use to mitigate impacts on values for which the special area was established.

Additional management direction for 8.1, 8.2, 8.3, 8.4, 8.5, and 8.6 areas is described below.

Because the Spruce Knob-Seneca Rocks NRA is managed under a separate law from the rest of the Forest, it has been given a separate Management Prescription section, complete with Management Emphasis, Area Description, Desired Conditions, and Management Direction.



From North Fork Mountain in the Spruce Knob – Seneca Rocks NRA

Management Prescription 8.1 - Spruce Knob-Seneca Rocks NRA

This prescription applies to the entire National Recreation Area but provides for different types of management within the area. Whereas the 1986 Forest Plan had a number of different Management Prescriptions within the boundaries of the NRA, the 2006 Plan has only one prescription, and will manage different types of areas though application of the direction found below and descriptions associated with the Recreation Opportunity Spectrum (ROS) that the Forest uses to identify and track a variety of recreational opportunities and settings. For example, developed recreation areas—such as Seneca Rocks Discovery Center, Seneca Shadows Campground, Big Bend Campground, and the Spruce Knob Overlook—will be managed as Rural ROS settings. However, areas that had a 6.2 prescription in the 1986 Plan—Seneca Creek, North Fork Mountain, and Smoke Hole—will be managed as Semi-Primitive Non-Motorized ROS settings. Additional management direction has been provided to help clarify how that management will maintain the undeveloped character of these SPNM areas. Other areas within the NRA will be managed as Roaded Natural or Semi-Primitive Motorized settings, according to their current level of development and desired conditions.

Management Emphasis

This prescription emphasizes management of the Congressionally designated National Recreation Area (NRA) to provide:

Primary

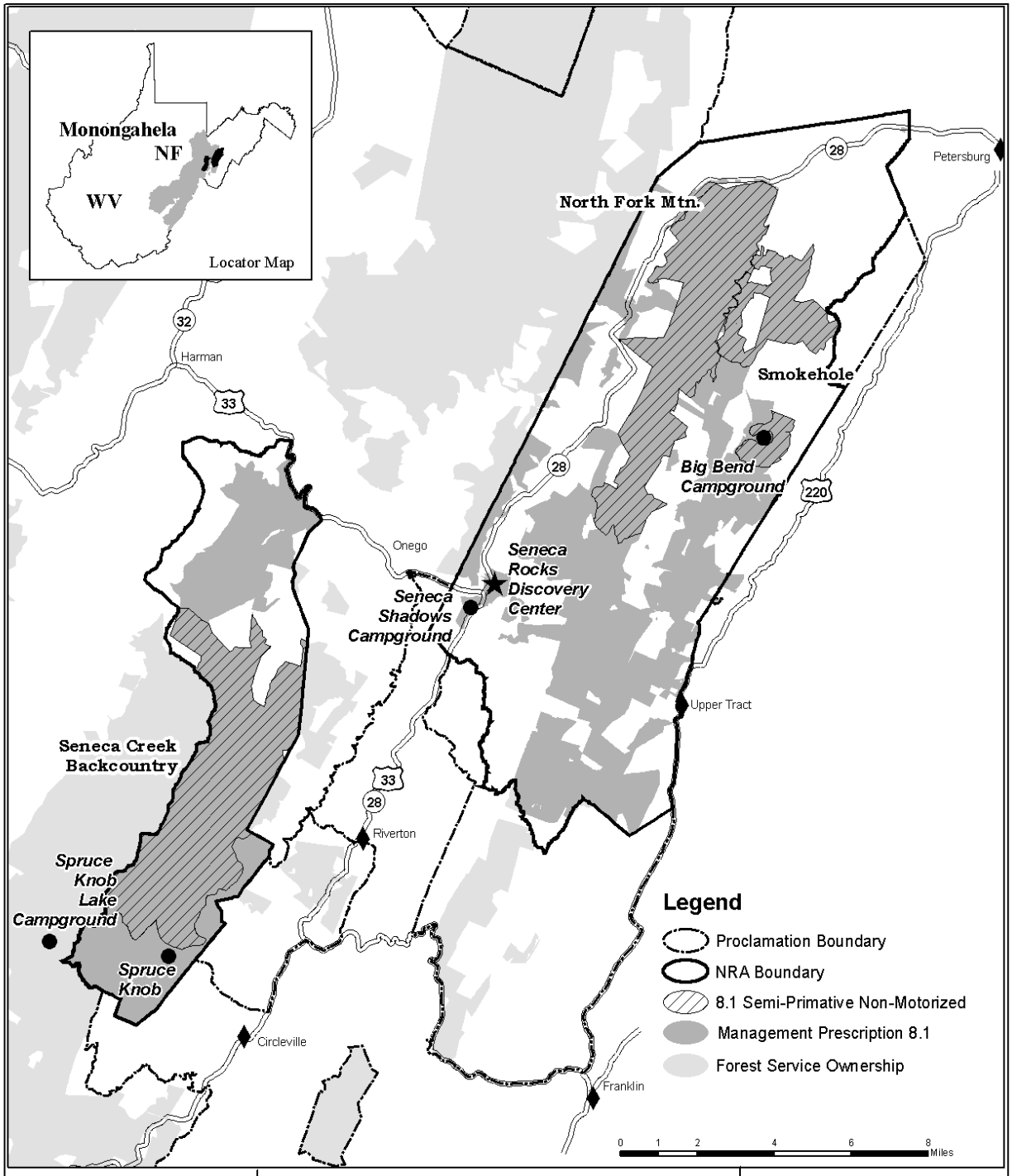
- Public outdoor recreation benefits.
- Conservation of scenic, scientific, historic and other values contributing to public enjoyment.
- A variety of recreation opportunities and Recreation Opportunity Spectrum settings, ranging from urban/rural to semi-primitive non-motorized.

Secondary

- Restoration of ecological communities and natural habitat structure.
- Wildlife habitat for a variety of species.

Area Description

The area is characterized by a mix of public and private lands. The public lands are managed to provide a variety of recreation opportunities and settings. Recreation opportunities range from a high degree of development (Seneca Rocks Discovery Center and Seneca Shadows Campground) to very low development in backcountry areas (North Fork Mountain, Smoke Hole, and Seneca Backcountry). The ROS settings also vary, from Rural at developed recreation settings to Semi-Primitive Non-Motorized in backcountry settings. The area provides a variety of trails and trail uses with opportunities for hikers, mountain bikers and equestrians. Structures within the NRA vary significantly depending on the ROS setting.



MNF GIS
UTM, Zone 17,
NAD 83
06/29/06

Management Prescription 8.1

Original data was compiled from multiple source data
and may not meet the U.S. National Mapping Accuracy Standard
of the Office of Management and Budget.
This map has no warranties as to its contents or accuracy.

N W E S

The 99,862-acre NRA is divided into two units. The Spruce Knob unit comprises 27,032 acres, including 5,821 acres of private and 21,211 acres of public land, and the Seneca Rocks unit, which is 72,830 acres in size, including 36,853 acres of private and 35,977 of National Forest System lands. The 57,188 acres of public land within the NRA is about 7 percent of the entire Monongahela National Forest. Elevations within the NRA range from about 1,000 feet near Petersburg to 4,861 feet at Spruce Knob.

The major forest communities and their current age classes are depicted in the table below. Openings presently account for about 5.4 percent of vegetation conditions on NFS lands.

Current Vegetation Conditions on NFS Lands in Management Prescription 8.1						
Forest Community	Percent of Community in Rx Area	Percent by Age Class for Each Community				
		Early Successional (0-19 years)	Early to Mid Successional (20-39 years)	Mid Successional (40-79 years)	Mid to Late Successional (80-120 years)	Late Successional (>120 years)
Conifer	3.2	0	4.9	52.3	38.8	4.0
Northern Hardwoods	4.3	2.7	0.7	39.2	57.4	0
Mixed Cove Hardwoods	33.2	9.7	2.2	53.8	31.7	2.6
Mixed Oak	44.9	5.5	2.2	32.1	50.4	9.8
Pine-Oak	8.8	2.2	5.2	31.5	49.8	11.3

Because this prescription area has a diversity of landforms and vegetation types, it provides a variety of habitat for wildlife, fish, and plant species. For these same reasons, a variety of rare flora and fauna, and non-native invasive species are also found within this prescription. There are 11 range allotments located in the area, comprising an estimated 1,400 acres.

At least half of the prescription area is considered to be in Fire Regime 1, Condition Class 3 or Fire Regime III, Condition Class 2. These areas represent the best opportunity to use prescribed fire to reduce fuels and restore natural habitat structure and stand density, species composition, and disturbance regimes.

The NRA provides a wide variety of access, ranging from federal highways to remote backcountry trails. There are an estimated 25 miles of Forest System Level 3, 4, and 5 roads in this prescription, creating an average open road density of 0.3 miles per square mile. There are also an estimated 66 miles of trail in this prescription.

An estimated 2% of the total prescription area has privately owned mineral rights. There are no gas wells and about 11 miles of gas pipeline in this prescription area. There are no other utility corridors in the area, and there are two communication or electronic sites.

There are an estimated 13 miles of currently listed 303(d) impaired stream, the South Branch Potomac River, in the area.

Portions of five eligible Wild and Scenic River segments, totaling 38.7 miles, occur within this prescription area. All segments are within the NRA, but not all of the Potomac River segments are on NFS lands. River miles, classification, and values are described in the table below.

Rivers are currently managed according to Wild and Scenic River Act guidance for their classification and to maintain outstandingly remarkable values and free-flowing status.

Eligible Wild and Scenic River Segments in MP 8.1			
River Name	**Classification**	**Outstandingly Remarkable Values**	**Miles**
South Branch Potomac River	Recreational	Scenery, Recreation, geology, wildlife	13.2
South Branch Potomac River	Scenic	Scenery, Recreation, geology, wildlife	9.3
NF S. Branch Potomac River	Scenic	Scenery, Recreation	3.2
Seneca Creek	Recreational	Fisheries	5.0
Seneca Creek	Wild	Scenery, Recreation, Fisheries	8.0

Desired Conditions

People visiting the NRA within the National Forest can find outstanding opportunities for a variety of recreation opportunities, ranging from viewing scenery from major highways and viewing interpretive exhibits at the Seneca Rocks Discovery Center, to semi-primitive and unconfined recreation, including exploration, solitude, risk, and challenge in the backcountry areas. Moderate to Very High Scenic Quality is maintained based on the ROS classification on National Forest System lands within this management prescription.

The area provides a diversity of habitats for wildlife species, including remote habitat for species that are sensitive to disturbance. Age class distribution varies significantly from open areas to backcountry areas dominated by late successional stands that form gaps from natural disturbances as they grow older.

Management Direction for 8.1 – Spruce Knob-Seneca Rocks NRA		
Type	**Number**	**Direction Description**
1900 – Vegetation		
Standard	8101	No programmed commercial timber harvest shall occur. However, vegetation may be treated for the following reasons: a) To enhance recreation opportunities or settings, b) To maintain or enhance public safety, c) To help control insect or disease outbreaks, d) To salvage or restore areas damaged by natural phenomena such as insects, disease, wind or ice/snow storms, and fire, or e) To help restore or maintain natural habitat structure or declining ecological communities (e.g., oak, oak-pine, aspen)
Standard	8102	In areas managed as SPNM, no timber stand improvement is allowed.
Guideline	8103	In areas managed as SPNM, vegetation treatments should not detract from the overall undeveloped character of the area.
Guideline	8104	Planting native species for enhancement of visual quality or recreational settings may occur. Non-native grasses, shrubs and trees that are not considered invasive may be planted in developed recreation areas.
Guideline	8105	Openings may be maintained or developed to enhance scenery, recreational settings, and wildlife habitat.
2200 – Range		
Goal	8106	Design and implement forage management practices to be consistent with the desired ROS setting within the NRA.

Management Direction for 8.1 – Spruce Knob-Seneca Rocks NRA		
Type	**Number**	**Direction Description**
Standard	8107	Range improvements are permitted on existing allotments to provide a viable grazing opportunity and to maintain the visual and recreation benefits of the openings.
Standard	8108	Encroaching woody vegetation and non-native invasive herbaceous species may be controlled as needed on existing allotments
2310 – Recreation System Planning		
Goal	8109	Develop a management plan for the Spruce Knob-Seneca Rocks National Recreation Area. This document will provide the desired ROS zoning indicated throughout this management direction.
Standard	8110	Recreation planning shall be consistent with the desired Recreation Opportunity Spectrum (ROS) opportunities and settings.
2320 – Develop Recreation Sites in the Public Sector		
Goal	8111	Provide facilities and trails that are consistent with the desired ROS setting.
2350 – Recreation: General Forest Areas		
Goal	8112	Provide facilities and trails that are consistent with the desired ROS setting.
Guideline	8113	In areas managed for SPNM opportunities, recreation facilities should be relatively uncommon, and they should be designed to blend in with the natural environment.
Guideline	8114	Trail densities should not exceed 4 miles per square mile in Semi-Primitive Non-Motorized, 6 miles per square mile in Roaded Natural, and no maximum limit within Rural ROS settings.
Guideline	8115	Appropriate uses in areas managed for SPNM opportunities may include, but are not limited to hiking, backpacking, camping, nature study, bicycling, mountain climbing, horseback riding, fishing, hunting, and cross-country skiing.
2380 – Scenery Management		
Goal	8116	Design management activities to blend with the natural character of the landscape.
Goal	8117	Manage the NRA to provide moderate to very high scenic integrity, consistent with the ROS setting.
2470 – Silvicultural Systems		
Goal	8118	Identify and evaluate opportunities to restore ecological communities and natural habitat structure.
Guideline	8119	Uneven-aged silviculture, thinning, and prescribed fire are the preferred methods for restoration of ecological communities and natural habitat structure in accessible stands.
2500 – Water and Soil		
Guideline	8120	Watershed improvement or restoration is permitted for the purpose of reducing soil erosion and improving surface and ground water quality.
Guideline	8121	Watershed improvement projects should be designed to blend in with the natural environment and be consistent with the desired ROS setting within the NRA.
2600 – Wildlife Management		
Goal	8122	Provide habitat for native or and desired non-native species. Manage wildlife openings and grasslands to enhance recreational opportunities, including wildlife viewing and hunting.
Guideline	8123	New openings should use native vegetation as prescribed in Guideline VE05.
2630 - Fish Habitat		
Standard	8124	Addition of limestone fines to improve water quality and fish habitat is allowed.
Standard	8125	In areas managed as SPNM, addition of limestone fines to improve water quality and fish habitat shall only be allowed where existing roads provide access, or through delivery by other feasible means consistent with the SPNM setting.
Guideline	8126	Fish management practices, such as fish stocking and stream habitat improvement or

Management Direction for 8.1 – Spruce Knob-Seneca Rocks NRA		
Type	**Number**	**Direction Description**
		protection should be consistent with the desired ROS setting within the NRA
Guideline	8127	Streamside shade planting should be designed to maintain or enhance stream temperature and provide habitat cover.
2700 – Special Uses		
Guideline	8128	Special use permitted activities, both recreation and non-recreation, should not alter or detract from the desired ROS settings within the NRA.
Guideline	8129	In areas managed as SPNM, non-recreation special use permits should not detract from the desired undeveloped character of the area. Recreation special use permits, including outfitter guide operations, should provide SPNM opportunities or at least be consistent with the ROS setting.
Guideline	8130	New utility corridors should not be permitted, except for the exercise of prior and/or private rights. Power and telephone lines should be placed underground whenever practical. They should always be placed underground in developed recreation areas.
2800 – Minerals		
Standard	8131	In areas managed as SPNM, federal oil and gas leases may only be issued if subject to a stipulation that prohibits surface occupancy.
Guideline	8132	Extra restrictions, such as timing of operations, may be necessary in this prescription to protect the outstanding values and recreation opportunities of the NRA.
5100 – Fire		
Standard	8133	Wildfires shall typically be suppressed.
Guideline	8134	In areas managed as SPNM, motorized and mechanized equipment and vehicles may be used for suppression activities, but hand tools and low impact techniques are preferred.
Guideline	8135	Prescribed fire may be used to help restore or maintain fire-dependent ecosystems, wildlife openings, or range allotments.
5400 – Land Ownership		
Guideline	8136	Acquisition of lands and rights-of-way to enhance scenic quality, or to provide additional or expanded recreational opportunities or trail access should be given high priority.
7100 - Transportation System Planning		
Goal	8137	Manage authorized Forest roads to provide public access and to provide or enhance recreational opportunities consistent with the desired ROS setting within the NRA.
Goal	8138	In areas managed as SPNM, reduce existing roads through any one or combination of the following strategies: a) Decommission roads where they are no longer needed for management/access, b) Restore roads to productivity where needed, c) Convert roads to trails and/or linear wildlife openings, or d) Allow roads to return to productivity and natural appearance on their own.
Standard	8139	In areas managed as SPNM, no new roads shall be constructed except as required or allowed by statute, outstanding or reserved rights, or existing permits, leases, or contracts.
Standard	8140	In areas managed as SPNM, roads that are constructed for exceptions listed in Standard 8139 shall be built to the minimum standard needed to protect other resources and provide for user safety, and shall normally be decommissioned and rehabilitated at the end of operations or need.
Standard	8141	In areas managed as SPNM, Forest System roads shall be closed to public motorized use. Infrequent administrative use may occur, and motorized use by lessees, permittees, contactors, and cooperators may be authorized with appropriate controls and limitations.
Guideline	8142	In areas managed as SPNM, authorized roads may be maintained or reconstructed to provide for necessary administrative and authorized access.

Management Prescription 8.2 – National Natural Landmarks

The Falls of Hills Creek and Gaudineer NNLs are addressed under Management Prescription 8.3, as they are also Scenic Areas.

8.2 – Big Run Bog National Natural Landmark		
Type	**Number**	**Direction Description**
Goal	8201	Maintain and study the bog community.
Standard	8202	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8203	No facilities shall be constructed within the bog to support recreation use.
Standard	8204	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8205	Vegetation manipulation, planting, or introduction of non-native invasive species shall not be allowed within the bog.
Standard	8206	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.
Standard	8207	Erosion control work in areas draining into the glades shall be done promptly, using methods that will produce quick and effective control.
Standard	8208	Use of limestone gravel shall be limited or prohibited where it could adversely affect the natural pH level of the bog.

8.2 – Shavers Mountain Spruce-Hemlock Stand National Natural Landmark		
Type	**Number**	**Direction Description**
Goal	8209	Maintain old growth/mature forest ecosystem.
Standard	8210	Timber harvest is prohibited, as much of this area is in the Otter Creek Wilderness.
Standard	8211	No new facilities or roads shall be constructed.
Standard	8212	Livestock grazing is not permitted.
Standard	8213	Public motorized use is prohibited.
Standard	8214	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.2, 8.4 – Blister Run Swamp National Natural Landmark and Botanical Area		
Type	**Number**	**Direction Description**
Goal	8215	Maintain and study red spruce and balsam fir characteristics.
Standard	8216	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8217	No facilities or roads shall be constructed. Existing facility or road maintenance is allowed.
Standard	8218	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8219	Silvicultural practices are allowed to maintain vegetation types.
Standard	8220	Use of limestone gravel shall be limited or prohibited where it could adversely affect the natural pH level of the swamp.
Standard	8221	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.2, 8.4 – Cranberry Glades National Natural Landmark and Botanical Area		
Type	**Number**	**Direction Description**
Goal	8222	Protect the bog ecosystem, while providing recreation and interpretive uses of the area to a level consistent with its protection.
Standard	8223	Plants or plant parts may only be removed for scientific purposes and with written permission, with one exception. The gathering of cranberries for personal use is allowed from the boardwalk.
Standard	8224	Livestock grazing is prohibited.
Standard	8225	No campgrounds or picnic areas shall be constructed within ½ mile of the area.
Standard	8226	No impoundments shall be constructed upstream from the glades.
Standard	8227	Hazard or down trees near the boardwalk may be removed for trail maintenance and public safety purposes.
Standard	8228	No timber products, including firewood, shall be removed.
Standard	8229	No timber stand improvement or reforestation is allowed.
Standard	8230	No wildlife habitat management involving vegetation manipulation is allowed.
Standard	8231	Erosion control work in areas draining into the glades shall be done promptly, using methods that will produce quick and effective control.
Standard	8232	Use of limestone gravel shall be limited or prohibited where it could adversely affect the natural pH level of the glades.
Standard	8233	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.2, 8.4 – Fisher Spring Bog National Natural Landmark and Botanical Area		
Type	**Number**	**Direction Description**
Goal	8234	Maintain the integrity of the bog and its associated flora and fauna.
Standard	8235	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8236	No facilities or roads shall be constructed. Existing facility or road maintenance is allowed.
Standard	8237	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8238	Open campfires are prohibited.
Standard	8239	Mineral exploration and development are prohibited.

Management Prescription 8.3 – Scenic Areas

8.2, 8.3 – Falls of Hills Creek Scenic Area and National Natural Landmark		
Type	**Number**	**Direction Description**
Goal	8301	Emphasize recreational use of the area, while maintaining the high scenic quality.
Standard	8302	Livestock grazing is not permitted.
Standard	8303	Camping is prohibited within the area boundary. Picnicking and interpretation are allowed.
Standard	8304	Commercial timber harvest is prohibited except to address public safety concerns.
Standard	8305	Hazard trees may be removed, and vegetation may be cut to create or improve scenic overlooks.
Standard	8306	No timber stand improvement or reforestation is allowed.
Standard	8307	No wildlife openings shall be created or maintained.
Standard	8308	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.2, 8.3 – Gaudineer National Natural Landmark and Scenic Area		
Type	**Number**	**Direction Description**
Goal	8309	Maintain virgin forest characteristics.
Standard	8310	Recreation development is limited to interpretation of the area's special characteristics.
Standard	8311	Trail maintenance shall conform to the level of public access and use. Favor native materials. Hazard trees or branches adjacent to or leaning over the trail may be removed.
Standard	8312	Public motorized use on trails is prohibited.
Standard	8313	No new facilities shall be constructed. Maintenance of existing facilities is allowed.
Standard	8314	No timber products, including firewood, shall be removed from the area.
Standard	8315	No timber stand improvement, intermediate harvests, or reforestation are allowed.
Standard	8316	Use of limestone gravel on the loop trail is prohibited to minimize potential effects to the plant communities in the area.
Standard	8317	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.
Standard	8318	Insect and disease control is not allowed except to protect adjacent land values or control non-native invasive pests.
Standard	8319	No wildlife openings shall be created or maintained.
Guideline	8320	Visitors should be made aware of the inherent danger in the area during high winds.

8.3 – Dolly Sods Scenic Area		
Type	**Number**	**Direction Description**
Goal	8321	Maintain the natural appearance, and the scenic, recreational, and botanical qualities of the area.
Standard	8322	Livestock grazing may only be permitted if there is no conflict with the scenic and botanical qualities of the area.
Standard	8323	Structural and non-structural range improvements are prohibited.
Standard	8324	Camping is prohibited within 300 feet of Forest Road 75.
Standard	8325	No commercially owned facilities are allowed.
Standard	8326	Public motorized transport and equipment is restricted to Forest maintained roads.
Standard	8327	Open campfires are prohibited.
Standard	8328	Pack and saddle stock may only be used on trails and areas maintained for this use.
Standard	8329	Green commercial timber sales are prohibited.
Standard	8330	Timber cutting, pesticides, or prescribed fire are allowed if used to improve scenic or botanical qualities, or for safety reasons, salvage, or insect and disease control.
Standard	8331	Personal use firewood collecting is prohibited.
Standard	8332	Use of limestone gravel shall be limited or prohibited where it could adversely affect the natural pH level of bogs or other rare communities within the area.
Standard	8333	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.
Standard	8334	No new wildlife openings, impoundments, or water holes shall be constructed.
Standard	8335	Commercial special uses that require the construction of permanent structures are not allowed.
Standard	8336	Existing roads within the area shall be maintained or improved, but no new roads shall be built for Forest management.

Management Prescription 8.4 – Botanical and Geological Areas

The Blister Run Swamp, Cranberry Glades, and Fisher Spring Run Bog Botanical Areas are addressed under Management Prescription 8.2, as they are also National Natural Landmarks.

8.4 – Botanical Areas: Bear Rocks Bog, Bickle Slope, Big Draft, Glade Run Swamp, Meadow Creek, Mt. Porte Crayon, Rohrbaugh Plains Bog, Stuart Knob, and Whites Draft		
Type	**No.**	**Direction Description**
Goal	8401	Maintain rare plant communities for which the areas were established.
Standard	8402	Commercial timber harvest is prohibited except to address public safety concerns or to protect the special characteristics of the area.
Standard	8403	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8404	No facilities or roads shall be constructed.
Standard	8405	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8406	Use of limestone gravel shall be limited or prohibited where it could adversely affect the natural pH level of bogs within the areas.
Standard	8407	Federal oil and gas leases may be issued in these prescription areas, but shall be subject to a stipulation that prohibits surface occupancy. The exception is Rohrbaugh Plains Bog in the Dolly Sods Wilderness, where mineral exploration and development is prohibited.
Standard	8408	Motorized travel is prohibited except as authorized by the District Ranger for outstanding rights, health or safety emergencies, or management of natural resources.

8.4 – Black Mountain Botanical Area		
Type	**No.**	**Direction Description**
Goal	8409	Maintain stands of Black Mountain purple rhododendron. Treat overstories to perpetuate purple rhododendron and blossom production along Forest Road 76.
Standard	8410	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8411	No new facilities shall be constructed. Maintenance of existing facilities is allowed.
Standard	8412	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8413	Motorized travel is prohibited except as authorized by the District Ranger for outstanding rights, health or safety emergencies, or management of natural resources.
Standard	8414	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.4 – Fannie Bennett Hemlock Grove Botanical Area		
Type	**No.**	**Direction Description**
Goal	8415	Emphasize the preservation of virgin forest.
Standard	8416	No facilities or roads shall be constructed. Existing facility or road maintenance is allowed.
Standard	8417	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8418	Commercial timber harvest is prohibited except to address public safety concerns.
Standard	8419	Commercial special uses that require a permanent facility shall not be permitted.
Standard	8420	Motorized travel is prohibited except as authorized by the District Ranger for outstanding rights, health or safety emergencies, or management of natural resources.
Standard	8421	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.4 – North Fork Mountain Red Pine Botanical Area		
Type	**Number**	**Direction Description**
Goal	8422	Emphasize the preservation of virgin forest.
Standard	8423	No facilities or roads shall be constructed. Existing facility or road maintenance is allowed.
Standard	8424	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8425	Commercial timber harvest is prohibited except to address public safety concerns or to help maintain the special characteristics of the area.
Standard	8426	Commercial special uses that require a permanent facility shall not be permitted.
Standard	8427	Motorized travel is prohibited except as authorized by the District Ranger for outstanding rights, health or safety emergencies, or management of natural resources.
Standard	8428	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.4 – Max Rothkugel Plantation		
Type	**Number**	**Direction Description**
Goal	8429	Emphasize plantation development and protection. a) Release, thin, and display planted trees. b) Study and promote the regeneration of Norway spruce and European larch. c) Use Integrated Pest Management methods to minimize development of pest problems.
Standard	8430	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8431	Recreational development shall be limited to interpretive opportunities related to the area's unique characteristics. A small parking area near US Highway 250 may be provided.
Standard	8432	Trail construction and maintenance shall conform with the level of interpretive opportunities offered to facilitate public access and use. Favor the use of native materials. Obvious hazards, such as dead trees or branches near or over the trail, may be removed.
Standard	8433	Rotation age shall be defined by the age of physiological decline.
Standard	8434	Timber products, except firewood, may be removed by commercial sales.
Standard	8435	Activity fuels may be removed or treated by any means other than burning.
Standard	8436	In and around the developed site, vegetation management shall normally occur between November 1 and May 1.
Standard	8437	All fires within the area shall be suppressed.
Standard	8438	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.4 – Virgin White Pine Botanical Area		
Type	**Number**	**Direction Description**
Goal	8439	Emphasize the preservation of virgin forest.
Standard	8440	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8441	No facilities or roads shall be constructed. Existing facility or road maintenance is allowed.
Standard	8442	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8443	Commercial timber harvest is prohibited except to address public safety concerns.
Standard	8444	Firewood collecting and sales are prohibited.
Standard	8445	Hazard trees adjacent to and posing a threat to traffic on Forest Road 96 may be removed.
Standard	8446	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.4 – Blue Rock Geological Area		
Type	**Number**	**Direction Description**
Goal	8447	Maintain the geological feature and associated resources for which the area was established.
Standard	8448	Commercial timber harvest is prohibited except to address public safety concerns.
Standard	8449	No new facilities or roads shall be constructed.
Standard	8450	Motorized travel is prohibited except as authorized by the District Ranger for outstanding rights, health or safety emergencies, or management of natural resources.
Standard	8451	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

Management Prescription 8.5 – Research Areas

8.5 – Black Cherry, Red Spruce, and Yellow Poplar Candidate Research Natural Areas		
Type	**Number**	**Direction Description**
Goal	8501	Maintain designated cover types for research purposes.
Standard	8502	Commercial timber harvest is prohibited except to address public safety concerns.
Standard	8503	Do not sign area for public or identify area on maps intended for public distribution.
Standard	8504	No facilities or roads shall be constructed.
Standard	8505	Livestock grazing is not permitted.
Standard	8506	Public motorized use is prohibited.
Standard	8507	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8508	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.

8.5 – Pike Knob Candidate Research Natural Area		
Type	**Number**	**Direction Description**
Goal	8509	Maintain existing cover types for research purposes.
Goal	8510	Cooperate with adjacent landowner on management of red pine and other rare plants.
Standard	8511	Commercial timber harvest is prohibited except to address public safety concerns, to conduct research, or to maintain the values for which the area was created.
Standard	8512	No facilities or roads shall be constructed.
Standard	8513	Livestock grazing is not permitted.
Standard	8514	Public motorized use is prohibited.
Standard	8515	Plants or plant parts may only be removed for scientific purposes and with written permission.
Standard	8516	Federal oil and gas leases may be issued in the prescription area, but shall be subject to a stipulation that prohibits surface occupancy.
Standard	8517	Commercial special uses that require a permanent facility shall not be permitted.
Standard	8518	Prescribed fire may be used to maintain the existing forest or as part of research efforts conducted in the area.

Because the Fernow Experimental Forest is managed under a separate mandate, different than the rest of the Forest, it has been given a separate Management Prescription section, complete with Management Emphasis, Area Description, Desired Conditions, and Management Direction.

Management Prescription 8.5 – Fernow Experimental Forest

Management Emphasis

This prescription emphasizes management of the Fernow Experimental Forest for research activities. The Fernow was formally mandated in 1934 to be made "permanently available for forest research and the demonstration of its results". The land management goal is to facilitate scientific research of central Appalachian forest ecosystems in order to improve their management. Therefore, maintaining the ability to conduct manipulative research is a primary objective on the Fernow Experimental Forest.

Area Description

The 4,600-acre Fernow Experimental Forest is located south of Parsons, West Virginia, and is administered by the staff of RWU-NE-4353, Sustaining the Diversity and Productivity of Appalachian Forests, of the Northeastern Research Station. The Fernow encompasses most of the Elklick Run drainage basin and the Stonelick Run drainage basin. The Fernow is well-roaded, but basically undeveloped, with no access to electrical power. An estimated 58% of the Fernow area has privately owned mineral rights. The area includes Big Springs Cave, a winter hibernacula for Indiana bats, and throughout the forest, many populations of running buffalo clover. Both are federally endangered species.

The ecological land type of the Fernow Experimental Forest is referred to as the Allegheny Mountains Section of the Central Appalachian Broadleaf Forest (M221B) in the Forest Service National Hierarchical Framework of Ecological Units. The landtype association is designated as Allegheny Front Side Slopes (Ba10) and vegetation is classified as mixed mesophytic. Elevations range from 1750 to 3650 feet above sea level, and slopes ranging from 20 to 50 percent cover most of the area. There are no current or planned range allotments within the area.

The Loop Road Research Area is also assigned to this Management Prescription; however it is not within the boundary of the Fernow Experimental Forest. This 800-acre area on the Greenbrier Ranger District on Middle Mountain is managed by the Experimental Forest staff for conducting research studies related to the management of Appalachian timber types, specifically growth and yield studies of managed and unmanaged stands.

Desired Conditions

The Fernow Experimental Forest supports an active research program that includes both long-term and short-term experiments, and research that is manipulative as well as observational in nature. The research program addresses research needs of a wide variety of clients. Ongoing, long-term research is continued and opportunities for new research are available.

Management Direction

Forest-wide Standards and Guidelines are generally applicable to the Fernow, except where they conflict with research activities, or as described below.

Management Direction for 8.5 – Fernow Experimental Forest		
Type	**Number**	**Direction Description**
1900 - Vegetation		
Goal	8519	Manage vegetation in conjunction with ongoing and proposed research studies, while providing habitat for populations of non-game, game and threatened, endangered and sensitive species.
Guideline	8520	Silvicultural treatments, including fire, harvesting and herbicides, may be utilized in designed research studies.
Guideline	8521	Monitor and maintain populations of endangered and sensitive plants.
2310 – Recreation System Planning		
Goal	8522	Protect the integrity of research studies from uncontrolled recreational disturbance by limiting recreational use.
2350 - General Forest Environment Areas		
Standard	8523	No overnight camping or campfires are permitted on the Fernow Experimental Forest.
Standard	8524	Only ORV use approved for administrative purposes is allowed; no recreational ORV use is allowed.
2500 – Water and Soil		
Goal	8525	Maintain the integrity of water and soil resources during research manipulations.
Guideline	8526	Use West Virginia's Best Management Practices for providing streamside zone protection, including erosion and sedimentation control.
2600 – Wildlife Management		
Goal	8527	Provide habitat for game and non-game species.
Guideline	8528	Monitor and maintain habitat for threatened, endangered, and sensitive wildlife species.
2800 – Minerals		
Standard	8529	Federal oil and gas leases may only be issued if subject to a stipulation that prohibits surface occupancy.
Standard	8530	Federal coal may only be leased in those cases where it would be extracted in conjunction with adjacent private mineral development.
Guideline	8531	Extra restrictions, such as timing of operations, may be necessary in this prescription to protect ongoing research projects.
5100 – Fire		
Standard	8532	Wildfires shall typically be suppressed. Any suppression techniques, including the use of motorized and mechanical equipment, may be used.
Standard	8533	Prescribed natural fire shall not occur without an approved plan.
Guideline	8534	Prescribed fire may be used as part of ongoing research projects.
7100 - Transportation System Planning		
Standard	8535	Roads that are constructed for outstanding rights or the development of approved oil and gas and other federal mineral operations shall be built to the minimum standard needed to protect other resources, and will normally be decommissioned and rehabilitated at the conclusion of operations.

Management Prescription 8.6 – Grouse Management Areas

8.6 – Spruce Mountain and Brushy Mountain Grouse Management Areas		
Type	**Number**	**Direction Description**
Goal	8601	Emphasize the creation and maintenance of ruffed grouse habitat. Coordinate vegetation management with the habitat needs of species requiring relatively high degrees of diversity.
Standard	8602	Rotation ages may be reduced to achieve a cutting pattern desirable for habitat diversity.
Standard	8603	Consult with WVDNR biologists in the planning of project activities for this area.
Standard	8604	Construction, drilling, and development under federal gas or oil leases is not allowed during grouse hunting season.
Guideline	8605	Public motorized use should be restricted to reduce grouse disturbance and vulnerability. Work with WVDNR to provide sufficient motorized access for adequate hunter distribution during the grouse hunting season. Unlimited motorized access should be avoided.
Guideline	8606	Opening size and spacing limitations may be varied in order to increase edge effect and provide habitat diversity. Linear openings and forest clearings may be developed to provide brood habitat.
Guideline	8607	Favor non-invasive legumes when developing new wildlife openings.
Guideline	8608	Prescribed fire should be used as a tool to delay succession where possible, especially in pine-oak stands.
Guideline	8609	At least 3 drumming logs should be left per acre in regeneration areas.
Guideline	8610	Grapevine and greenbrier vines should be retained along road edges and in regeneration areas.

Chapter IV

Monitoring and Evaluation

Table of Contents

Page No.

Monitoring and Evaluation Overview.....IV-1

Legal and Regulatory Requirements.....IV-2

Monitoring Framework and Components.....IV-2
- Monitoring Framework.....IV-2
- Monitoring Prioritization.....IV-3
- Information Management.....IV-4
- Public Involvement.....IV-5

The Monitoring Matrix.....IV-5

Changes to Chapter IV Between the Proposed and Final Plans

Minor editorial and clarification changes were made to the text, but the Monitoring Framework components and Monitoring Matrix items are essentially the same as they were in the Proposed Revised Forest Plan.

MONITORING AND EVALUATION OVERVIEW

Monitoring and evaluation are separate, sequential activities. Monitoring involves collecting data by observation or measurement. Evaluation involves analyzing and interpreting monitoring data. The information gained from monitoring and evaluation is used to determine how well the desired conditions, goals, objectives, and outcomes of the forest plan have been met. Monitoring and evaluation keep the forest plan up-do-date and responsive to changing conditions and issues, and provide the feedback mechanism for adaptive management (Figure IV-1). The results are used to identify if and when changes are needed to the forest plan or the way it is implemented.

Figure IV-1.
An Adaptive Management Learning Loop

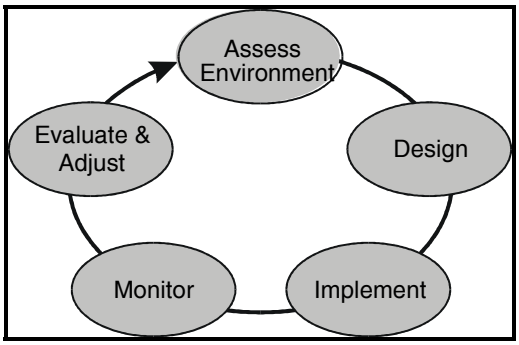
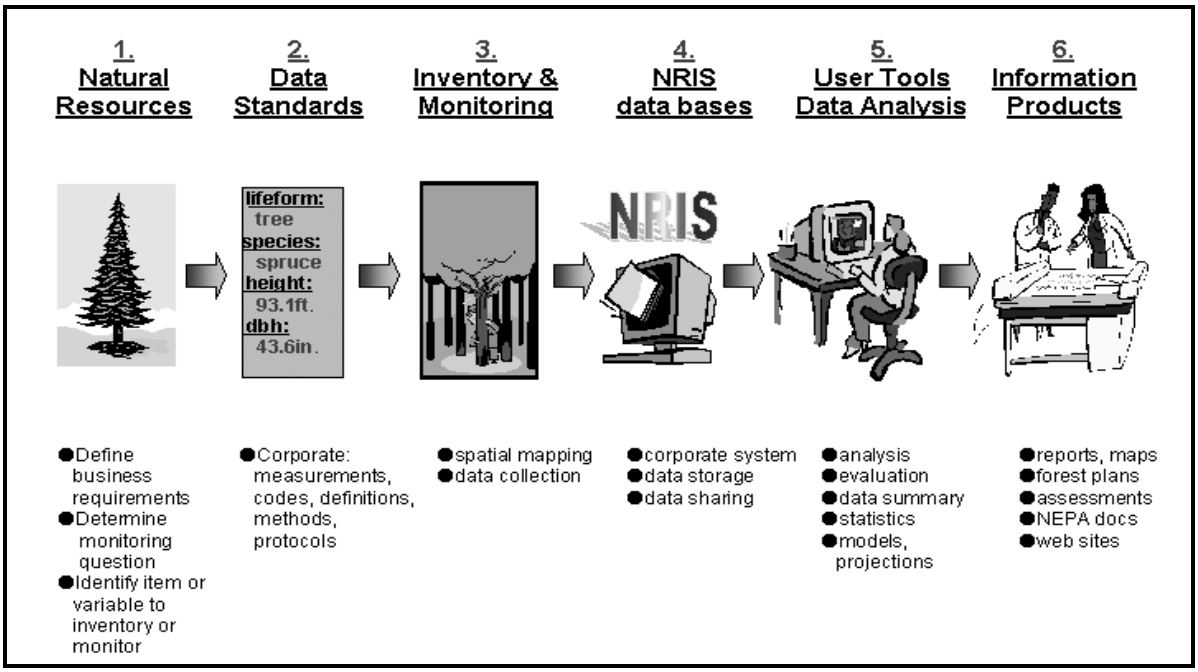


Figure IV-2. Steps in the Monitoring and Evaluation Process



Monitoring and evaluation involve more than just collecting and interpreting data. Data must be converted to useful information and stored in a form that is accessible to others. A plan for managing monitoring information over time is critical to a successful program (Figure IV-2).

Data will be designed and collected according to appropriate data standards and entered into corporate databases such as Automated Lands Program (ALP), Natural Resource Inventory System (NRIS), or Geographic Information System (GIS). The information can then be accessed and analyzed to produce information products such as monitoring reports that would be available for internal and external review.

LEGAL AND REGULATORY REQUIREMENTS

The forest plan addresses several types of monitoring. These requirements fall into four broad categories:

- Category 1: Required monitoring items related to the National Forest Management Act,
- Category 2: Attainment of goals and objectives,
- Category 3: Implementation of standards and guidelines, and
- Category 4: Effects of prescriptions and management practices.

Category 1 monitoring items are mandatory components of the Forest Plan, whereas Category 2 through 4 monitoring items are more flexible and are tailored to address issues raised through public comments and interdisciplinary team review, as translated into Forest-wide direction and management practices. These items are more likely to change through time as indicated through monitoring evaluation results and recommendations. A more complete description of Category 1 through 4 monitoring items is shown in the Monitoring Matrix section.

MONITORING FRAMEWORK AND COMPONENTS

Monitoring Framework

Many approaches to Forest Plan monitoring are currently being used throughout the agency. However, each monitoring plan should: 1) meet the legal requirements of the planning regulations, 2) be consistent with corporate data standards and protocols, and 3) be developed by an interdisciplinary team that addresses the ecological, social and economic dimensions of Forest management in an integrated manner.

To meet these objectives, the Forest's monitoring framework has four components:

1. Forest Plan (Chapter IV) Direction that provides broad, strategic guidance.
2. A Monitoring and Evaluation Implementation Guide that provides specific, technical guidance.
3. An Annual Monitoring Schedule that outlines specific tasks for the current year.
4. An Annual Monitoring Evaluation Review that provides a forum to review current year findings and identify specific modifications if necessary.

The relationship between each is shown in Table IV-1.

Table IV-1. Monitoring Framework

Forest Plan Monitoring (Chapter 4)	Monitoring and Evaluation Implementation Guide	Annual Monitoring Schedule	Annual Monitoring Evaluation Review
Broad and Strategic. Provides the monitoring requirements in the forest plan itself. It focuses on what is needed to monitor the forest plan. It provides the overall monitoring strategy including specific questions that need to be answered, what will be monitored, timetables for reporting, and other information.	*Focused and Technical*. Describes how, where, and when to accomplish the monitoring prescribed in the forest plan. It provides the specific methods, protocols and analytical procedures. The Guide is intended to be flexible and could be modified in response to new information, updated procedures, emerging issues, and budgetary considerations without amending the forest plan.	*Specific, Technical, and Prescriptive.* Identifies precisely what will be monitored, where, when, and by whom for the current or upcoming year. The Annual Monitoring Schedule will be tied to the Forest Plan Monitoring (Chapter IV) and the Monitoring Implementation Guide.	*Specific, Technical, and Prescriptive.* A Forest interdisciplinary team will review the current year's monitoring and evaluation results at the end of each calendar year. Based on these findings they will recommend to the Forest Leadership Team necessary changes (if any) to the Forest Plan, Monitoring Guide, or Forest Service Manual or Handbook.

Monitoring Prioritization

Within any agency or institution, necessary or desirable work demands often exceed available funding. Forest Plan monitoring is no exception. If budget levels limit the Forest's ability to perform all monitoring tasks, then those items specifically required by law or court order will be given the highest priority for implementation. Additionally, a prioritization process for Chapter IV and the Monitoring Implementation Guide items will be developed to ensure efficient use of limited time, money and personnel. Following is a list of potential criteria that may be used in the screening process:

- Is monitoring of a particular question or resource mandated by law or court order?
- Is there a high degree of uncertainty associated with management assumptions?.
- Is there a high degree of disparity between existing and desired conditions?
- Are proposed management activities likely to affect resources of concern?.
- How do monitoring items fit into national and regional priorities?
- How well do monitoring items fit with public comments and interests?
- What are the consequences of not knowing resource conditions?
- Will monitoring respond to a key issue?

Monitoring priorities will be established each year using the above criteria, information gained during the past year, and budgets. The prioritization process will be described within the Monitoring Implementation Guide.

Information Management

There will likely be a tremendous amount of monitoring information collected over time. If this information is not documented so it can easily be retrieved, shared with the public and other stakeholders, or used by agency managers to foster better decisions, it is of limited value. Therefore, information management should consist of:

1. Management of the collection and storage of data,
2. Evaluation and interpretation of data, and
3. Sharing of information internally and externally.

Manage the Collection and Storage of Data

A Forest interdisciplinary team will work with Forest Service employees and cooperators to see that data are collected using standard methods found in the Monitoring Implementation Guide and are entered into the appropriate databases.

Evaluation and Interpretation of Data

Evaluation is the process of transforming data into information. It is a process of synthesis that brings together value, judgment, and reason with monitoring information to answer selected monitoring questions. Successful adaptive management depends on this information in order to move the Forest toward desired conditions.

A Forest interdisciplinary team will review the current year's monitoring and evaluation results at the end of each calendar year. Based on these findings, they will recommend to the Forest Leadership Team necessary changes (if any) to the Forest Plan, Monitoring Implementation Guide, or Forest Service Manual or Handbook.

The findings gathered through monitoring will be summarized in various reports (most notably the annual Monitoring and Evaluation Report) and publications, and they will be shared internally and externally with cooperating agencies and organizations, interest groups, policy makers, and the general public.

Annual Monitoring and Evaluation Report

The annual Monitoring and Evaluation Report provides an opportunity to track progress toward the implementation of revised forest plan decisions and the effectiveness of specific management practices. The focus of the evaluation is providing short- and long-term guidance to ongoing management. The Monitoring and Evaluation Report should include components such as:

1. Forest accomplishments toward desired conditions and outputs of goods and services.
2. Forest Plan Amendment Status.
3. Status of other agency/institution cooperative monitoring.
4. Summary of available information on MIS or comparable species/habitats.
5. Summary of large-scale or significant projects or programs.
6. Update of research needs.
7. Public participation/disclosure plan.

Public Involvement

The Forest Service mission will not be realized without public trust in our decision-making process. Even though agency decisions will not consistently please everyone, using an open process for making decisions should foster public understanding of the rationale for individual decisions. The same principle applies to monitoring. Moreover, since our approach incorporates an adaptive strategy, frequent public feedback is necessary to facilitate monitoring activity prioritization, protocols, evaluation, and ultimately better informed decisions. Subsequently a strategy for involving the public and other agencies in Forest monitoring planning, execution, and evaluation will be formulated each year. Partnerships with interest groups, volunteer groups, universities, and other federal, state and local agencies will be part of that strategy. Monitoring information trips are an option for the public to review monitoring findings and methods and address management implications. Other avenues of public involvement such as news releases, the internet, brochures, and public reports may also be used.

THE MONITORING MATRIX

Table IV-2 provides descriptions of the components that are used in The Monitoring Matrix, Table IV-3.

Table IV-2. Definitions of Components in the Monitoring Matrix

Component	Definition
Resource Area	A quantitative or qualitative parameter that can be assessed.
Monitoring Question	Specific monitoring question(s) developed to ensure that monitoring and evaluation addresses information essential to measuring the Forest Plan. These questions relate to the different purposes and rationales for monitoring. There may be more than one monitoring question per resource area.
Monitoring Driver	Drivers identify the reason(s) why we are monitoring a particular monitoring item. Following is a list of monitoring drivers: (1) Legal and regulatory requirements or Forest Service Manual direction, (2) Forest Plan direction, (3) Validation of assumptions and predictions, (4) Court rulings. Legal and regulatory drivers are described whereas desired conditions, goals, objective, and S and G's are referenced.
Measurement Frequency	Describes how often monitoring information is collected.
Evaluation and Reporting Frequency	Describes how often monitoring information is evaluated and reported.
Precision and Reliability	Two categories of precision and reliability are appropriate at the forest plan scale: Class A: Methods appropriate for modeling or quantitative measurement. Results have a high degree of repeatability, reliability, accuracy and precision. Class B: Methods based on project records, personal communications, ocular estimates, pace transects, informal visitor surveys and similar types of assessments. The degree of repeatability, reliability, accuracy and precision are not as high as Class A methods, but they still provide valuable information.

Table IV-3 is in two parts. The first part, IV-3a, displays monitoring items that are required through the NFMA.

Table IV-3a. Monitoring Matrix - Required Monitoring Items

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - NFMA	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
1. Outputs and Services	How close are projected outputs and services to actual, including revenues returned to the US Treasury, payments in lieu of taxes and monetary returns to State and local governments?	A quantitative estimate of performance comparing outputs and services with those projected by the forest plan.	A	Annual	Annual
2. Costs	How close are projected costs to actual costs?	Documentation of costs associated with carrying out planned management prescriptions as compared with costs estimated in the forest plan.	A	Annual	Annual
3. Insects and Disease	Are insect and disease populations compatible with objectives for restoring or maintaining healthy forest conditions?	Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.	A/B	Annual	Annual
4. Insects, Diseases, and Disturbance Processes	To what extent is the Forest managing undesirable occurrences of fire, insect and disease outbreaks through prevention, suppression, and integrated pest management?	Wildfires, destructive insects and disease organisms do not increase to potentially damaging levels following management activities.	A/B	1-5 years	1-5 years
5. Recreation Motor Vehicles	To what extent is the Forest providing RMV opportunities; what are the effects of RMVs on the physical and social environment; and how effective are forest management practices in managing RMV use?	Off-road vehicle use shall be planned and implemented to protect land and other resources, promote public safety, and minimize conflicts with other uses of the NFS lands. Forest planning shall evaluate the potential effects of vehicle use off roads and classify areas and trails of NFS lands as to whether or not	A/B	1-5 years	1-5 years

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - NFMA	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
		off-road vehicle use may be permitted.			
6. Forest Productivity	Are the effects of Forest management, including prescriptions, resulting in significant changes to productivity of the land?	Documentation of the measured prescriptions and effects, including significant changes in productivity of the land.	A/B	1-5 years	1-5 years
7. Timber	Are harvested lands adequately restocked after five years?	Lands are adequately restocked as specified in the forest plan.	A	Annual	Annual
8. Timber	To what extent is timber management occurring on lands suitable for such production?	Lands identified as not suited for timber production are examined at least every 10 years to determine if the have become suited; and that, if determined suited, such lands are returned to timber production.	A	10 years	10 years
9. Timber	How much even-aged management (especially clear cutting) should be used, and in what forest types should it be used?	Maximum size limits for even-aged harvest areas are evaluated to determine whether such size limits should be continued.	B	Years 5 and 10	Years 5 and 10
10. Wildlife: Management Indicator Species	To what extent is Forest management moving toward desired habitat conditions for MIS and species associated with MIS habitats?	Monitor management indicator species and their relationships to habitat affected by management. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practicable.	A/B	Annual	1-5 years

The second part of the table displays monitoring items that are tied to achieving Forest-wide direction and management practices found in Chapters II and III of the 2006 Forest Plan. There are undoubtedly items in this table that potentially overlap each other or items found in Table IV-3a, and we may adjust these in time as the monitoring plan is implemented and evaluated. This matrix and the Monitoring Implementation Guide are, to a certain degree, intended to be dynamic and flexible, as one of the important keys to an effective monitoring and evaluation plan is the ability to determine a need for change and to adapt to that need over time.

Table IV-3b. Monitoring Matrix - Forest Plan Direction Monitoring Items

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - Forest Plan Direction	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
11. Air Quality	To what extent is Forest management contributing or responding to air pollution effects on ecosystems and visibility?	AQ01 AQ04	A/B	1-5 years	1-5 years
12. Air Quality	Are Air Quality Related Values of the Dolly Sods and Otter Creek Wildernesses improving over current adversely affected levels?	AQO2	A/B	1-5 years	1-5 years
13. Air Quality	What are the trends in ambient air pollutant concentrations near the Forest?	AQ02	A/B	1-5 years	1-5 years
14. Fire	To what extent is unwanted wildland fire on the Forest being successfully suppressed?	FM02, FM03, FM11	A/B	1-5 years	1-5 years
15. Fire	How, where, and to what extent are desired fuel conditions being met by lowering Fire Regime Condition Classes 3 and 2?	FM03, FM09, FM10, FM16	A/B	1-5 years	1-5 years
16. Fire	How, where, and to what extent is prescribed fire being used to mimic natural processes, or maintain/improve vegetation conditions, or restore natural processes and functions to fire-adapted ecosystems?	FM05, FM06, FM09	A/B	1-5 years	1-5 years
17. Fire	Are smoke management practices effective in protecting human health and public safety from potential adverse impacts of prescribed fire emissions?	FM13	A/B	1-5 years	1-5 years
18. Heritage Resources	Are mitigation measures effective and being followed as recommended in project designs?	HR01, HR04, HR05	A	1-5 Years	1-5 Years
19. Heritage Resources	Are heritage resources being affected in non-	HR01, HR04, HR05	A	1-5 Years	1-5 Years

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - Forest Plan Direction	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
	project areas?				
20. Minerals	Are mineral exploration, development and production mitigation measures being followed and are they effective in reducing impacts?	MG01, MG02, MG04, MG08, MG09, MG15, MG17, MG19, MG21, MG28, MG32, MG34-MG38	A/B	1-5 years	1-5 years
21. Public Health and Safety	Do Forest-provided drinking water sources meet standards to protect human health?	RF26	A	1 Year	1-5 Years
22. Public Health and Safety	Are Forest facilities and recreation sites safe for employee and public use and enjoyment?	RC02, RC11 RC15, RC16	A	1-5 Years	1-5 Years
23. Recreation	To what extent is the Forest providing a range of motorized and non-motorized recreation opportunities that incorporate diverse public interests yet achieve applicable MP goals?	RC01, RC03, RC08	A/B	1-5 years	1-5 years
24. Recreation	To what extent are Forest management activities within the Recreation Opportunity Spectrum Objectives (ROS)?	RC02, RC03, RC08, RC24, RC26, RC29, RC34, SM01-SM08	A/B	1-5 years	1-5 years
25. Recreation	To what extent do Forest recreation facilities and opportunities meet accessibility, health, safety, cost, and maintenance requirements and achieve resource and social objectives?	RC02, RC06, RC07, RC08, RC11, RC12, RC24, RC29, SM01-SM08	A	1-5 years	1-5 years
26. Regional Forester Sensitive Species	To what extent is Forest management contributing to the conservation of sensitive species and maintaining or restoring their habitat conditions?	VE07, VE11, VE14, WF01, WF11, WF17	A/B	1-5 years	1-5 years
27. Scenic Resources	Are forest management activities providing scenic quality as defined by the Scenic Integrity Objectives?	SM01-SM08	B	1-5 years	1-5 years
28. Soils	Is soil detrimental disturbance associated	SW03, SW04, SW06, SW07,	A/B	1-5 years	1-5 years

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - Forest Plan Direction	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
	with land management activities below the 15% soil productivity loss threshold?	SW11, SW14, SW15, SW 16, SW18			
29. Soils	Is acid deposition affecting soil productivity loss and if so, is it affecting land sustainability?	SW08, SW10, SW12, SW13	A/B	1-5 years	1-5 years
30. Special Uses	Does management of special forest products, recreation/wilderness, and other special use permits meet Forest Plan and agency direction?	LS21, LS23, LS27, LS18	A/B	1-5 years	1-5 years
31. Threatened and Endangered Species	To what extent is Forest management contributing to the protection and recovery of threatened and endangered species?	TE01-TE04, TE38	A/B	1-5 years	1-5 years
32. Transportation System	To what extent is the Forest, in coordination with other public road agencies, providing safe, cost effective, minimum necessary road systems for administrative and public use?	Forest Plan Desired Conditions, RF01-RF04, RF07-RF13	A/B	1-5 years	1-5 years
33. Transportation System	To what extent are road and trails closures effective in prohibiting unauthorized motor vehicle use?	RF01, RF16, RF17, RF19	A/B	1-5 years	1-5 years
34.Vegetation	To what extent is the Forest providing a range of vegetative communities that address diverse public interests and needs while contributing to ecosystem sustainability and biological diversity?	VE01, VE02, VE06, TE01, Forest Plan Desired Conditions	A/B	1-5 years	1-5 years
35. Vegetation	Are non-native invasive plants located and treated to prevent or limit further spread?	Forest Plan Desired Conditions	A/B	1-5 years	1-5 years
36. Vegetation	Is timber harvesting sustainable over the long-term and maintained at predictable and dependable levels?	Forest Plan Desired Conditions	A	1–5 years	1-5 years

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - Forest Plan Direction	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
37. Vegetation Composition and Structure	To what extent are Forest management, natural disturbances, and subsequent recovery processes changing vegetation composition and structure?	VE01, VE06	A/B	1-5 years	1-5 years
38. Vegetation Composition and Structure	To what extent is the Forest meeting vegetation composition and age class desired conditions and goals for MPs 3.0, 4.1, and 6.1?	Composition and age class desired conditions and goals for MPs 3.0, 4.1, and 6.1	A	5 Years	5 Years
39. Watershed, Riparian and Aquatic Ecosystem Health	To what extent are Forest management and other external influences (such as acid deposition) affecting water quality, quantity, and physical conditions of aquatic ecosystems?	SW01, SW20, SW21, SW22, SW26, SW30	A/B	1-5 years	1-5 years
40. Watershed, Riparian and Aquatic Ecosystem Health	To what extent is Forest management affecting riparian ecosystem function and health?	SW26, SW29, SW30, SW34, SW39	A/B	1-5 years	1-5 years
41. Watershed, Riparian and Aquatic Ecosystem Health	To what extent is Forest management affecting soil erosion and stream sedimentation processes?	SW01, SW20, SW21	A/B	1-2 years	1-2 years
42. Watershed, Riparian and Aquatic Ecosystem Health	To what extent is Forest management affecting the aquatic community, including habitat connectivity and invasive/non-native conditions and effects?	SW36, SW46, WF01, WF04, WF18, WF20, WF22	A/B	1-5 years	1-5 years
43. Watershed, Riparian and Aquatic Ecosystem Health	To what extent is Forest management contributing to the restoration of healthy watersheds and aquatic ecosystems?	SW01, SW13, SW20, SW29, SW30, WF04	A/B	1-5 years	1-5 years
44. Wildlife, Fish, and Plants	To what extent is Forest management providing ecological conditions to maintain viable populations of native and desired non-native species?	WF01, WF04, WF23	A/B	1-5 years	1-5 years
45. Wildlife and Fish Non-	To what extent is Forest management contributing	VE15, VE18, VE20	A/B	1-5 years	1-5 years

Resource, Activity, Practice, Effect To Monitor	Monitoring Question	Driver - Forest Plan Direction	Precision and Reliability	Measuring Frequency	Evaluation and Reporting Frequency
native Invasive Species	or responding to populations of terrestrial or aquatic non-native species that threaten native ecosystems?				
46. Wildlife Disturbance	How effective are road and trail closures and other access limitations at limiting disturbance of disturbance-sensitive species?	WF02, WF16, direction in MP 6.1 and 4.1 relating to 40% harvest limitation, road closures, date limitations on firewood sales	A/B	1-5 years	1-5 years
47. Wildlife Habitat: Retained Features	Is Forest management providing adequate habitat diversity and structure through maintenance or enhancement of snags, culls, leave trees, and downed woody debris?	TE31-TE33, TE41, TE42, TE44, TE45, TE 49, TE50, TR14, specific direction in management prescriptions relating to snags, culls, leave clumps, etc.	A/B	1-5 years	1-5 years
48. Wildlife Habitat: Social and Recreational Opportunities	Is the Forest providing adequate habitat to meet the demand for wildlife-related social and recreational opportunities?	WF03	A/B	1-5 years	1-5 years

Chapter V

Glossary and Acronyms

Table of Contents

Page No.

Glossary of Terms V-1

Acronyms V-19

Changes to Chapter V Between the Proposed and Final Plans

There was no Chapter V in the Proposed Revised Forest Plan. We have added this Glossary to the Final 2006 Forest Plan so that users and readers will have a convenient source of definitions for many of the terms and acronyms that are found therein.

GLOSSARY OF TERMS

The variety of technical terms and inevitable acronyms used in the planning process can make for confusing reading. The following collection of definitions and acronyms is an attempt to clarify some of the terminology used in the Forest Plan Revision process. We hope that this glossary will help people navigate through the language of Forest Planning. The terms that are defined are in alphabetical order.

[A]

ABIOTIC – Non-living (refers to air, rocks, soil particles, and etcetera).

ACID DEPOSITION – Acid deposition occurs when acidic particles, gases, and precipitation leave the atmosphere and settle on land. Acid deposition has two components: wet (commonly know as acid rain) and dry deposition.

ACQUISITION – Obtaining land through purchase, exchange, or donation.

ACTIVITY AREA – An area impacted by a land management activity, excluding specified transportation facilities, dedicated trails, and system roads. Activity areas include such areas as harvest units within timber sales and prescribed burn units. Riparian and other environmentally sensitive areas may be monitored and evaluated as activity areas within larger management areas.

AGE CLASS – An interval into which the age range of tree stands is divided for classification. For Forest Plan revision, we have commonly used three (young, mature, or old development stages) or five (early, early-mid, mid, mid-late, and late successional stages) age classes.

ALLOWABLE SALE QUANTITY (ASQ) - The amount of chargeable timber volume that can be sold from a Forest cannot exceed the Allowable Sale Quantity established for the Plan area. Each Forest Plan must establish an ASQ (10.5 mmcf or 63 mmbf). The quantity is a ceiling rather than a future sales level projection or target, and it does not reflect all of the factors that may influence future sale levels.

ALL-TERRAIN VEHICLE (ATV) - An engine-driven device which has a net weight of 650 pounds or less, and a width of 48 inches or less, which is equipped with a seat that is straddled by the operator, and is designed to travel on 3 or more low-pressure tires.

ALTERNATIVE - A set of possible management solutions to a collection of resource or management issues. A range of alternatives, which address the management issues to varying degrees, are identified and evaluated for their effects on people and the environment.

ANALYSIS OF THE MANAGEMENT SITUATION (AMS) - Using resource assessments and the 1986 Forest Plan as background, the AMS documents existing Forest Plan direction for a particular resource concern; speculates on the expected results should the existing direction continue; evaluates the kinds of problems that may occur should the existing direction continue; discusses whether or not these problems need to be resolved, and determines the potential to resolve them in plan revision.

[B]

BACHELOR COLONY (As applied to Virginia big-eared bats) – A group of male Virginia big-eared bats that day-roost together during the spring and summer months, generally in a cave or mine. The term

is also used to describe the cave or mine used for such roosting, including the surface entrance(s) and subterranean passages.

BASAL AREA – A measure of the density of trees in an area. It is determined by estimating the total cross-sectional area of all trees measured at breast height (4.5 feet) expressed in square feet per acre.

BASE CATIONS – Positively charged ions such as magnesium, sodium, calcium, and potassium that are released when water flows over rocks and through the soil. The release of base cations increases the pH of water. Base cations provide essential nutrients for plants, and they buffer soil and water from the acidity that comes from sulfates and nitrates deposited by air pollution.

BASE CATION DEPLETION – The loss of base cations occurs naturally through weathering of rocks and soil formation. However, the loss of base cations can be increased due to acid deposition, soil disturbance, and subsequent leaching. This accelerated loss may affect forest productivity.

BIN-WALL – A series of connected bins, generally filled with earth or gravel, that serves as a retaining wall, abutment, pier, or as protection against explosions or gunfire.

BIOLOGICAL ASSESSMENT (BA) – Information prepared by a federal agency to determine whether a proposed action is likely to: 1) adversely affect listed (threatened, endangered, or proposed) species, 2) jeopardize the continued existence of species, or 3) adversely modify critical habitat. BAs must be prepared for "major construction activities". The outcome of the BA determines whether formal consultation or a conference with the US Fish and Wildlife Service is necessary.

BIOLOGICAL DIVERSITY - The variety of life forms and processes within an area. Included in the consideration of biodiversity are the complexities of genetic variation, number and distribution of species, and the ways in which the variety of biologic communities interact and function.

BIOLOGICAL EVALUATION (BE) – A documented review of Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect Regional Forester's Sensitive Species, particularly whether the action may result in a trend toward federal listing.

BIOLOGICAL OPINION (BO) – An official report by the US Fish and Wildlife Service issued in response to a formal Forest Service request for consultation or conference. It states whether an action is likely to result in jeopardy to a species or adverse modification of its critical habitat.

BOARD FOOT – A volume of solid wood, equivalent to a piece one-foot square and one inch thick. An MBF equals one thousand board feet, and an MMBF equals one million board feet.

BORROW – In highway construction, materials used in the roadbed that are excavated from native materials in ground generally close to the road bed; the term "borrow" implies the excavation, hauling and spreading of the material from designated pits.

BORROW PIT – An excavation made for the purpose of obtaining earth, rock, or other fill material for use in construction.

BOTANICAL AREAS – Areas that contain specimens or groups of plants in plant communities that are significant because of their form, color, occurrence, habitat, location, life history, arrangement, ecology, environment, and/or variety.

BUFFER – A strip of vegetation that is left unmanaged or is managed to reduce the impact that a treatment or action on the area would have on an adjacent area. For example, channel buffers are zones around stream channels that are designed to protect the stream from specific effects, such as excess sedimentation, loss of large woody debris, or temperature extremes.

[C]

CANDIDATE RESEARCH NATURAL AREA (CRNA) - An area that has the potential for designation as a Research Natural Area; but needs formal evaluation. Given that a CRNA meets the criteria, it must then be nominated to Congress in order to be considered for RNA designation.

CANOPY – The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

CLEARCUTTING – The harvesting of all trees in one cut in an area for the purpose of creating a new, even-aged stand. This harvest method has generally been replaced by Clearcut with Reserve Trees, which leaves some trees in the harvest unit to provide for wildlife habitat and other resource benefits.

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 of Agriculture, or the Chief of the Forest Service;

2. Existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; and

3. Existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

COMMERCIAL TIMBER HARVEST – Any type of timber sale that produces merchantable wood products where the value of the product(s) usually is equal to or exceeds the direct cost of harvesting.

COMPACTION - Increased soil density (weight per unit volume) and strength that hampers root growth, reduces soil aeration, and inhibits soil water movement. Measurements pertain to the critical surface layers that typically contain a high proportion of the soil's organic matter and nutrients and or strongly affect water retention and movement in the soil.

CONGRESSIONALLY DESIGNATED WILDERNESS - An area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, so as to preserve its natural conditions and which:

1. Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;

2. Has outstanding opportunities for solitude or a primitive and unconfined type of recreation;

3. Has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and

4. May also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

CONIFER – Any of a wide range of predominantly evergreen, cone-bearing trees with needle-shaped or scale-like leaves, such as pine, spruce, or hemlock.

CONNECTIVITY - Condition in which the spatial arrangement of land cover types allows organisms and ecological processes (such as disturbance) to move across the landscape. Used in this sense, connectivity is the opposite of fragmentation.

CORPORATE DATABASE – A set of repositories designed for the electronic storage of shared information within a managed environment.

CRITICAL AREA PLANTING (for Soil Protection): Planting trees, shrubs, vines, grasses, and legumes on eroding areas or areas subject to accelerated erosion where mineral soil is exposed.

CRITICAL HABITAT – The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographic area occupied by a species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species.

CRITICAL LIFE STAGES – Critical life stages are portions of an animal's life cycle that: 1) are important to it's reproductive success, or 2) involve higher than average risk of mortality or harassment for individuals or a concentrated segment of a population. Critical life stages include, but are not necessarily limited to, courtship, breeding, nesting, spawning, brood-rearing, denning, and hibernation.

CROSS-COUNTRY OHV USE - This refers to the use of OHVs off of established trails, roads or routes.

CULL or CULL TREE – A tree or log that is not merchantable due to poor form, rot, or other defect.

CULTURAL RESOURCES – See Heritage Resources.

[D]

DBH – Diameter at breast height (4.5 feet).

DECISION CRITERIA - The primary rules or standards for evaluating alternatives and selecting a preferred alternative.

DESIRED FUTURE CONDITION - A portrayal of the land and resource conditions that is expected to result if goals and objectives are fully achieved.

DETRIMENTAL SOIL DISTURBANCE – The act of damaging soil or adversely affecting soil productivity through (for example) displacement, compaction, puddling, or burning.

DEVELOPED RECREATION – Recreation that requires facilities that in turn result in concentrated use of an area; for example, a campground or ski resort.

DISPERSED RECREATION – Recreation that does not occur in developed areas. Dispersed recreation is typically associated with low-density use distributed over large expanses of land.

DISPLACEMENT - Excessive mechanical relocation or removal of the surface mineral and/or organic soil layers sufficient to reduce long-term productivity and biodiversity of soil dependent flora and fauna. Mixing of mineral and organic soil materials is not considered detrimental displacement. However, its effects must be assessed on a case-by-case basis.

[E]

ECOLOGICAL LANDTYPE (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 of plant succession, an ELT is usually occupied by a predictable and relatively uniform plant community. Typical size usually is tens to hundreds of acres.

ECOSYSTEM - A community of living plants and animals interacting with each other and with their physical environment. A geographic area where it is meaningful to address the interrelationships with human social systems, sources of energy, and the ecological processes that shape change over time.

ECOSYSTEM RESTORATION - The process of re-establishing, to the extent possible, the structure, function, and composition of ecosystems.

ECOTONE – A transitional area between two communities that contains species from each community and some species that only live within the ecotone area.

ENDANGERED SPECIES – Species listed by the US Fish and Wildlife Service as being nationally endangered.

ENDANGERED SPECIES ACT (ESA), AS AMENDED – An act passed by Congress in 1973 to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, and to provide a program for conservation of such species.

ENVIRONMENTAL ANALYSIS – The process associated with the preparation of an environmental assessment or 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 (EA) – A concise public document that serves to: 1) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (finding of no significant impact), and 2) aid in agency's compliance with the National Environmental Policy Act (NEPA) when no environmental impact statement is necessary.

ENVIRONMENTAL EFFECT – Net change (negative or positive) in the physical, biological, social, or economic components of the environment resulting from human actions or natural disturbance. Effects and impacts as used in the EA are relatively synonymous, although "impacts" generally has a negative connotation.

ENVIRONMENTAL IMPACT STATEMENT (EIS) – This is the most rigorous level of environmental analysis, and typically provides several alternatives and analyzes the environmental consequences of each. An EIS is required by the NEPA for actions with a "significant impact on the human environment."

EPHEMERAL STREAM CHANNEL – Any stream channel that exhibits scouring of mineral soil. Though not a true riparian area, ephemeral channels provide hydrological connection to intermittent and perennial streams.

EROSION – The movement of soil from where it was formed. Rills, gullies, pedestals, and soil deposition are indicators of accelerated surface soil erosion. Accelerated erosion related to management activities can be prevented or minimized by controlling the amount, location, and duration of mineral soil exposure, thus avoiding concentrations of runoff and ensuring adequate revegetation. The distinction between a gully and a rill is one of depth. A gully is a consequence of water that cuts down into the soil along the line of flow. It is an obstacle to wheeled vehicles and is too deep to be obliterated by ordinary tillage. Rill erosion is the removal of soil through the cutting of many small, but conspicuous, channels where runoff concentrates. Rills are shallow enough that they are easily obliterated by tillage. Sheet erosion is subtler but can result in pedestals and obvious soil deposition when it is more severe. It is characterized by the more or less uniform removal of soil from an area without the development of conspicuous water channels (USDA Natural Resources Conservation Service 1996).

EVEN-AGED MANAGEMENT - The application of a combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration, and is harvested.

[F]

FOREST PLAN - The Forest Land and Resource Management Plan is a document that guides natural resource management activity and establishes management desired conditions, goals, objectives, standards, and guidelines for a National Forest, embodying the provisions of the National Forest Management Act of 1976.

FOREST PLAN AMENDMENT – Formal alteration of the Forest Plan by modification, deletion or additional changes of management direction. An amendment addresses only the issues that trigger a need for change. Amendments must satisfy both NFMA and NEPA procedural requirements including appropriate public notification.

FOREST PLAN REVISION - A formal modification of an existing Forest Plan to address changes in the natural, social and economic environment, new information about resources on and off National Forests, and new scientific knowledge that sheds new light on the assumptions of the existing Plan, and make the predicted impacts of the existing Plan less accurate and/or acceptable. The 1982 federal planning regulations require the Forest Service to revise a Forest Plan every 10-15 years.

FOREST ROAD OR TRAIL – A road or trail wholly or partly within, or adjacent to, and serving the National Forest System that the Forest Services determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

FOREST TRANSPORATION ATLAS – A display of the system of roads, trails, and airfields of an administrative unit, in this case the Monongahela National Forest.

FOREST TYPE – A natural group or association of different species of trees that commonly occur together over a large area. Forest types are defined and named after one or more dominant species of trees, such as the spruce-fire and the birch-beech-maple types.

FORMAL CONSULTATION – A process between US Fish and Wildlife Service and a federal agency that: 1) determines whether a proposed federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; 2) begins with a federal agency's written request and submittal of a complete initiation package; and 3) concludes with the issuance of a biological opinion and, if needed, incidental take statement.

FOUR-WHEEL DRIVE VEHICLE (4WD) - A full-sized vehicle with four-wheel drive, which is registered with the state, and legal to operate on public highways. Any Sport Utility Vehicle would fall in this class, although a 4WD may be a modified vehicle intended primarily for off-highway use.

FRAGMENTATION – The breaking up of contiguous areas into progressively smaller patches with increasing degrees of isolation from each other. This term usually applies to wildlife or fish habitat.

[G]

GENERAL FOREST AREA (New term for dispersed recreation) – Describes areas where recreation occurs outside of developed areas. Dispersed recreation is typically associated with low-density use distributed over large expanses of land.

GOAL - A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principle basis from which objectives are developed.

GROUND COVER - Effective ground cover can include low-growing plants, lichens and mosses, rock, litter, and duff. The amount of effective ground cover needed to prevent erosion varies by precipitation regime, slope, and soil texture. Lack of adequate effective ground cover usually results in accelerated surface erosion.

GROUP SELECTION – The removal of small groups of trees to meet a predetermined goal of size, distribution, and species. Group selection cuts are typically 3 acres or less in size.

GUIDELINE - A preferred or advisable course of action generally expected to be carried out. Guidelines can also describe limitations on management actions, but they are generally not as restrictive as standards. Guidelines often indicate measures that should be taken to help maintain or restore resource conditions, or prevent resource degradation. Deviation from compliance does not require a Forest Plan amendment, but rationale for deviation is required in the project record or NEPA documentation for a signed decision.

[H]

HABITAT - The environment in which an organism (plant or animal) lives.

HARVEST METHOD – A cutting method by which a stand of trees is logged. Emphasis is on meeting logging and resource management requirements while concurrently attaining silvicultural objectives.

HEADWALLS – A wall of any material at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency; divert direction of flow, or serve as a retaining wall.

HERITAGE RESOURCES - Resources that provide physical evidence of past human presence or behavior relating to the disciplines of archeology, architecture, ethnology, and history. Also referred to as cultural resources.

HIBERNACULUM (plural: HIBERNACULA) – A cave or mine in which bats hibernate, including the surface entrance(s) and subterranean passages.

[I]

INCIDENTAL TAKE – Take of ESA-listed fish of wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant.

INCIDENTAL TAKE STATEMENT – The document that recognizes the circumstances of and level of incidental take, the reasonable and prudent measures required to further minimize the level of incidental take, and the terms and conditions the Forest must comply with to implement the reasonable and prudent measures.

INFORMAL CONSULTATION – An optional process that includes all discussions and correspondence between the US Fish and Wildlife Service and a federal agency prior to formal consultation, to determine whether a proposed federal action may affect listed species or critical habitat. This process allows the federal agency to utilize the US Fish and Wildlife Service's expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action that could avoid potentially adverse effects.

INTERDISCIPLINARY TEAM (IDT) – A group of individuals with skills from different resources. An IDT is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and concerns. Team interaction provides necessary insight to all stages of the process.

INTERIOR FOREST - An area of late successional or old forest that is large enough, and of an appropriate shape to provide conditions that minimize predation, parasitism, and microclimate fluctuations associated with forest edges. These interior forest conditions provide critical habitat for a diversity of wildlife and plant species.

[K]

KEY AREA (for Indiana bat) – A key area is an area of mature or old forest near an Indiana bat hibernaculum that is established and managed to provide high-quality, undisturbed roosting and foraging habitat. A key area is at least 150 acres in size and is located as close to the hibernaculum entrance as possible. To the extent allowed by existing forest stands, a key area includes at least 20 acres of late successional forest (> 120 years old) and another 130 acres of mid-late (80–120 years old) or late successional forest.

[L]

LAND ALLOCATION – The commitment of a given area and its resources to the compatible combination of goods, services, and uses specified by a regional management goal or by a past management prescription.

LAND TYPE ASSOCIATION (LTA) - One of the most basic ecological units for Forest-wide planning; it describes areas of common ecosystem characteristics and generally (but not always)

numbering in the thousands of acres. LTAs are defined by similarities in general topography, geomorphic process, geology, soil and potential plant community patterns. This level of the Ecological Classification System is smaller than ecological subsections and larger than ecological land types with typical size in the tens or hundreds of thousands of acres.

LANDSCAPE PATTERN - The spatial arrangement of forest patches composed of different species or successional stages. The term may also be applied to patches of different land uses, such as residential, commercial, or agricultural. A landscape is a heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout.

[M]

MANANGEMENT INDICATOR SPECIES (MIS) - Species selected for monitoring because their population changes are believed to indicate the effects of management activities on habitats.

MANAGEMENT PRESCRIPTIONS (MP) – Regulations (36 CFR 219.3) define MPs as, "Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives." MPs are created by zoning the Forest into smaller units to provide more effective and efficient management organized around a common emphasis, such as timber management, wildlife habitat, or backcountry recreation. See also the Introduction to Chapter III of the Forest Plan.

MASS MOVEMENT - Soil mass movement (slumps, debris flows, etc.) accelerated above natural background levels or initiated by management activities.

MATERNITY COLONY (for Indiana bats) – A group of female Indiana bats that day-roost together during the spring and summer maternity season, generally in one or more snags or living trees. Young are born and reared while the female bats are gathered in a maternity colony.

MATERNITY COLONY (for Virginia big-eared bats) – A group of female Virginia big-eared bats that day-roost together during the spring and summer maternity season, generally in a cave or mine. Young are born and reared while the female bats are gathered in a maternity colony. The term is also used to describe the cave or mine used for maternity roosting, including the surface entrance(s) and subterranean passages.

MATERNITY SITE (for Indiana bats) – The area of land containing all of the day roosts used by a maternity colony of Indiana bats.

MONITORING - The process of collecting information to evaluate if the objectives and anticipated or assumed results of a management plan are being realized, or if implementation is proceeding as planned.

MULCHING - Mulching consists of the application of materials such as hay, straw, wood chips, paper, shredded bark other approved material (approved by the soil scientist) to the soil surface to conserve moisture, prevent surface compaction or crusting, control weeds, and help protect the site from erosion.

MUNICIPAL WATERSHED – Watersheds in which the primary resource emphasis is in the water supply function of the land. For the purposes of Forest planning, municipal watersheds include those from which municipal water supplies are derived, having a size of 5,000 acres or less as measured from the point of intake, and in which National Forest System ownership is 50 percent or more.

[N]

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) of 1969 - An act requiring that an analysis be made of the nature and significance of a proposed action and its reasonable alternatives in order to determine and evaluate their predictable environmental effects, including physical, biological, economic, and social consequences and their interactions; short and long term effects; and direct, indirect, and cumulative effects. Such an analysis may result in preparation of an Environmental Assessment or Environmental Impact Statement or finding that the action can be categorically excluded from the need to prepare either document.

NATIONAL FOREST MANAGEMENT ACT (NFMA) of 1976 - The act requiring comprehensive planning at both Regional and Forest levels. It sets forth regulations and procedures for planning the management of national forests.

NATIONAL FOREST SYSTEM ROAD – A forest road other than a road that has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority.

NATIONAL FOREST SYSTEM TRAIL – A forest trail other than a road that has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority.

NATIONAL SCENIC & RECREATION TRAILS – Trails designated by Congress for their high scenic or recreational values.

NEED FOR CHANGE (NFC) – A document that describes the process forest managers use to identify specific changes that are needed in Forest Plan Revision to accomplish goals and objectives.

NO ACTION (ALTERNATIVE) – The most likely condition expected to exist if current management practices continue unchanged. The analysis of this alternative is required for federal actions under the National Environmental Policy Act.

NON-ATTAINMENT AREA – EPA has identified six air pollutants that are a concern in terms of human health; these pollutants are called criteria pollutants. EPA has set National Ambient Air Quality Standards (NAAQS) for each criteria pollutant. Ambient air concentrations of each criteria pollutant cannot exceed these standards. Areas where the monitoring data shows an exceedence of the NAAQS are designated as non-attainment for the criteria pollutant(s) not meeting the standard. Additionally, any adjacent area that contributes to ambient air quality in the area not meeting the NAAQS is included in the non-attainment area.

NON-COMMERCIAL HARVEST – Harvest associated with vegetative management that does not result in the removal or sale of timber products.

NON-NATIVE INVASIVE SPECIES – A species that did not originate in the location it is living and has no natural predators or disease to keep it in check. As a result, it can out-compete other species for space, food, and water, negatively affecting native populations of species.

NOTICE OF INTENT (NOI) - A formal statement by the Forest Service informing the public of the intent to revise the existing Land and Resource Management Plans. The Notice of Intent is published in the Federal Register.

[O]

OBJECTIVE - A concise, time-specific statement of actions or results designed to help achieve goals. Objectives form the basis for project-level actions or proposals to help achieve Forest goals. Like goals, objectives are designed to maintain conditions if they are currently within their desired range, or move conditions toward their desired range if they are currently outside that range. The timeframe for accomplishing objectives, unless otherwise stated, is generally considered to be the planning period, or the next 10 to 15 years. More specific dates are not typically used because accomplishment can be delayed by funding, litigation, environmental changes, and other influences beyond the Forest's control.

OCCUPIED HABITAT – An area where a species is known to exist through positive identification, as through capture or well-documented observations.

OFF-HIGHWAY VEHICLE (OHV) – Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, wetland, or other natural terrain. OHVs include all-terrain vehicles (ATV), motorcycles, amphibious machines, snowmobiles, hovercraft, and any other vehicles that use mechanical power, including 2 and 4-wheel drive (4WD) vehicles that are highway registered, when operated off highways and roads. OHVs are also known as off-road vehicles (ORVs).

OLD GROWTH FOREST - A community with dominant trees at or past biological maturity. The age and structure of an old-growth community varies with species and site. Old growth stands are sometimes characterized by a multi-layered, uneven-aged size class structure; a high degree of compositional and structural patchiness and heterogeneity; and significant amounts of woody debris. See also Appendix B to the Forest Plan.

OPTIMUM METHOD (Clearcutting) – Clearcutting as the "optimum method" is defined in attachment 2 to the June 4, 1992 letter from the Chief of the FS, which states "Clearcutting would be limited to areas where it is essential to meet forest plan objectives and involve one or more of the following circumstances:

1. To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species.
2. To enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs, or similar development.
3. To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations.
4. To preclude or minimize the occurrence of potentially adverse impacts of insect or disease infestations, wind throw, logging damage, or other factors affecting forest health.
5. To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.
6. To rehabilitate poorly stocked stands due to past management practices or natural events.
7. To meet research needs."

OUTSTANDINGLY REMARKABLE VALUE – Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act are: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values…." Other similar values that may be considered include botanical, hydrological, paleontological, or scientific. Professional judgment is used to determine whether values exist to an outstandingly remarkable degree.

[P]

PLANNING CRITERIA - Rules that direct completion of the analysis used in developing the Forest Plan. Criteria may include: management philosophy, use of science, scale of analysis, use of information, use of classification systems, preparation of documents, collaboration/consultation, and public involvement.

PREFERRED ALTERNATIVE - From amongst the alternatives developed to address the range of possible solutions to the management issues of the Forest, the responsible official, using the Decision Criteria, selects that alternative that he/she feels best resolves the management issues within the context of the mission and priorities of the Forest Service. The preferred alternative is the basis for the Proposed Forest Plan.

PRESCRIBED FIRE – The application of fire under specified conditions to achieve specific land management objectives.

PRESCRIPTION AREA UNIT - A mapped block of NFS lands that has a single management prescription (MP). For example, each of the 5 wilderness areas on the Forest is a separate prescription area unit for MP 5.0. Prescription area units are currently mapped for the Forest (see project record) but they may change over time as NFS lands are acquired or exchanged, or as MPs change.

PRIMARY RANGE – Habitat that is most likely to be used for summer roosting, foraging, and fall swarming by Indiana bats. On the Monongahela National Forest, primary range generally includes all lands within 5 miles of known Indiana bat hibernacula.

PRIMITIVE – A Recreation Opportunity Spectrum classification for areas characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

PROGRAMMATIC INCIDENTAL TAKE STATEMENT– See incidental take statement.

PUBLIC INVOLVEMENT – A Forest Service process designed to broaden the information base upon which agency decision are made by 1) informing the public about Forest Service activities, plans, and decisions, and 2) encouraging public understanding about and participation in the planning processes which lead to final decision-making.

PUBLIC PARTICIPATION – Meetings, conferences, seminars, newsletters, written comments, survey questionnaires, or similar activities designed or held to obtain comments from the general public and specific groups about the National Forest System land management planning.

PUDDLING - This detrimental soil disturbance results from an alteration of soil structure severe enough to reduce the permeability and infiltration rate of the soil. Vehicle tracks are molded and typically have well-defined berms. Puddling can be caused by foot, hoof, and vehicle traffic.

[R]

RARE PLANT COMMUNITIES - These include areas where threatened, endangered, or sensitive plants or their potential habitats are found, and plant communities on rare, uncommon, or unique ecosystems such as wetlands, shale barrens, and limestone glades.

REASONABLE AND PRUDENT MEASURES – Action the US Fish and Wildlife Service believes necessary or appropriate to minimize the impacts to federally listed species.

RECORD OF DECISION (ROD) – This is a public document that identifies the alternative selected for management and provides the agency's rationale behind the decision. It accompanies the Final Environmental Impact Statement (EIS).

RECOVERY PLAN – A plan that outlines actions needed to recover and/or protect a federally listed species.

RECREATION OPPORTUNITY SPECTRUM (ROS) - A formal Forest Service process designed to delineate, define, and integrate outdoor recreation opportunities in land and resource management planning. ROS classes are used to describe all recreation opportunity areas: from natural, undisturbed, and undeveloped to heavily used, modified and developed. ROS delineations attempt to describe the kind of recreation experience one may have in a given part of the National Forest.

REGIONAL FORESTER'S SENSITIVE SPECIES (RFSS) – Plants or animal species identified by a Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trend in numbers and density, or by habitat capability or trend that would reduce the species' existing distribution. RFSS include, but are not limited to, USFWS candidate species, species de-listed by the USFWS in the last five years, and species with NatureServe Global, Trinomial or National Ranks of G1-G3, T1-T3 or N1-N3.

RESEARCH NATURAL AREA (RNA) - Designated areas that are permanently protected and maintained in a natural condition, and which include: unique ecosystems or ecological features, habitat for rare or sensitive species of plants and animals; and high-quality examples of common ecosystems. The national network of RNAs helps to protect genetic, species, ecosystem, and landscape-level biological diversity. RNAs that represent natural condition, common ecosystems serve as a baseline or reference areas that can be compared with similar ecosystems undergoing silvicultural or other management prescriptions.

RIPARIAN AREA – Terrestrial area where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated with high water tables, and soils that exhibit some wet characteristics.

ROAD - Any corridor on the land that is capable of being traveled by a full-sized vehicle; and that is not designated as a trail (with the expressed purpose of restricting full-sized vehicles).

ROAD ABANDONMENT - Method of road obliteration in which the road is rendered unusable to motorized vehicles.

ROAD CLOSURE - Process of closing a road to public vehicle traffic. Closures are used on system roads (roads intended for future use) for the purpose of limiting or prohibiting particular types of travel. System roads may be closed to all motorized traffic; or they may be closed to vehicle traffic, but remain accessible to trail vehicles (such as snowmobiles or ATVs). Gates may be used as closure devices when the intent is to restrict public traffic but permit administrative traffic, or to restrict traffic periodically or seasonally. Less flexible closure devices, such as berms, rocks, tank traps or downed trees may be used when the intent is to close the road to any vehicle traffic and essentially "mothball" the road until it is needed again some years in the future. Temporary roads may be closed during their period of operation, but will be obliterated when their utility is complete.

ROAD CONSTRUCTION OR RECONSTRUCTION – Supervision, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.

ROAD DENSITY - The quantity of roads per unit area, measured as miles per square mile.

ROADED MODIFIED (RM) – ROS classification for areas characterized with opportunity to get away from other users, easy access, little challenge or risk; substantially modified environment (roads, timber harvest units, slash, etc.); little evidence of other users except on roads; little regulation of users except on roads; standard motorized use; and vegetation alteration to enhance recreation setting.

ROADED NATURAL (RN) – ROS classification for areas characterized by a predominantly natural or natural-appearing environment with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities

ROAD OBLITERATION - Process of removing a road from the landscape. Obliteration is used on system and temporary roads that are to be removed from service (decommissioned). Obliteration can include removing evidence of any access points; removing any structures from the roadbed (such as culverts, bridges, signs, guide rails, etc.); and restoring wetlands and riparian areas.

RURAL (R) – ROS classification for areas characterized by a natural environment that has been substantially modified by development of structures, vegetative manipulation, or pastoral agriculture development. Resource modification and utilization practices may be used to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sound of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Moderate user densities are present away from developed sites. Facilities for intensified motorized use and parking are available.

RUTTING - Rutting is a more extreme form of detrimental puddling. Soils with low bearing strength (such as clays and organic soils) and those with high water tables are particularly susceptible. The ruts are molded and typically have well-defined berms. They disrupt soil structure and porosity, can adversely alter local groundwater hydrology and wetland function, and provide conduits for runoff. Rutting should be prevented and should be confined to less than 5 percent of an activity area.

Deep ruts	Ocular assessment	Relatively continuous tracks dominantly in excess of 6 inches deep and 10 feet long	High - easily detectable

[S]

SCENERY MANAGEMENT SYSTEM (SMS) – This system integrates aesthetics with biological, physical, and social/cultural resources when considering forest scenery during forest planning and project design.

SCENIC INTEGRITY – State of naturalness, or conversely, the state of disturbance created by human activities or alteration. Integrity is stated in degrees of deviation from the existing landscape character in a national forest.

SCOPING – Determining the extent of analysis necessary for an informed decision of a proposed action. The process includes: 1) reviewing Forest Plan direction as it relates to the analysis; 2) contacting those members of the public interested or affected by the proposed action to get their comments; and 3) determining local management concerns. This process may continue throughout project planning until a decision is made.

SECURITY AREAS – A portion of a management prescription unit in which timber harvest operations do not occur during a particular management entry. Security areas ensure that part of each management prescription unit is reserved as habitat for disturbance-sensitive wildlife during each management entry.

SEMI-PRIMITIVE MOTORIZED (SPM) – ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized use of primitive roads with predominantly natural surfaces and trails may be authorized.

SEMI-PRIMITIVE NON-MOTORIZED (SPNM) – ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized recreation use is not permitted, but primitive roads used for other resource management activities may be present on a limited basis. Use of such roads may be restricted to minimize impacts on recreational experience opportunities or other resources.

SENSITIVE SOILS – Soils on the MNF that are characterized as having high risk for erosion, slippage, and compaction due to the presence of floodplains, slopes greater than 50 percent, slippage potential, or having formed from limestone and fine-grained shale or siltstone.

SENSITIVE SPECIES – Species designated by the Regional Forester and included on the Regional Forester's Sensitive Species list. The list includes those species that are known, reported, or suspected to occur on, or in the immediate vicinity of the Eastern Region and require special management attention.

SHELTERWOOD – A series of two or three cuttings that open the stand and stimulate natural reproduction. A two cutting series has a seed cut and a removal cut, while a three cutting series has a preparatory cut, a seed cut, and a removal cut.

SLOPE CONTOURING – To construct or reconstruct a road in accordance with natural contours.

SNAG – A standing dead tree.

SPECIAL AREAS – Special designated areas included in Management Prescription 8.0. They include the NRA, National Natural Landmarks, Scenic Areas, Ecological Areas, and research areas.

SPECIAL USE PERMIT – A permit issued by the Forest Service, which authorizes use of National Forest System lands, improvements, and resources.

SPECIES VIABILITY EVALUATION (SVE) – This process of evaluating the viability of existing native and desired non-native species. The process includes identifying species at risk, compiling information about the species, and evaluating potential risks to viability under each of the plan alternatives.

STAND (of trees) – A community of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition as to be distinguishable from the forest on adjacent areas.

STANDARD - A binding limitation placed on management actions. Standards are typically action or activity restrictions designed to prevent degradation of resource conditions, or exceeding a threshold of unacceptable effects, so that conditions can be maintained or restored over time. However, exceptions may be made in some cases to allow temporary or short-term effects in order to achieve long-term goals. Standards must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive its application.

SUCCESSION - A series of dynamic changes by which organisms succeed one another through plant community (seral) stages leading to a potential natural community or climax. In the Plan Revision process, these are generally referred to as early, mid and late successional stages. Stages are transitory in nature, and describe a plant community from its earliest growth condition to a condition of full maturity.

SUITABLE HABITAT (for WV Northern Flying Squirrel) – Areas that have habitat characteristics required by WV northern flying squirrels as indicated by known capture locations. All suitable habitat is assumed to be potentially occupied by the WVNFS, even if no WVNFS have been captured in it (USFWS 2001). Generally, it includes forest habitat with red spruce and mixed red spruce/northern hardwood forest, Norway spruce plantations, mixed eastern hemlock/northern hardwoods, and overstory eastern hemlock or balsam fir with red spruce present in the understory. Suitable habitat also includes an 80-meter buffer around areas with the above-listed characteristics, as well as corridors to provide linkages for habitat areas and prevent barriers to movement.

SUITABLE TIMBERLAND – National Forest System land designated in the Forest Plan to be managed for timber production on a regulated basis. Also referred to as “suited timberland”.

SUSTAINED YIELD – The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest without impairment of the productivity of the land.

[T]

TAKE – To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.

TEMPORARY ROAD OR TRAIL – A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or trail and that is not included in a forest transportation atlas.

THREATENED SPECIES – Species listed by the US Fish and Wildlife Service as being nationally threatened.

TIMBER SALE – The cutting and removal of designated trees under the authority of a contract.

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.

TOPSOILING - Obtaining soil material favorable to plant growth from other places and spreading it over an area where vegetation is to be established. Topsoil is presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter.

TOTAL ROAD DENSITY - The measure of all roads per unit area, whether open or closed to traffic.

TRAFFIC SERVICE LEVEL (TSL) - A classification system developed by the Forest Service to describe a road in terms of the standard of vehicle one can expect to operate and the travel experience one can expect to encounter on the roadway.

TRAIL - Any corridor on the land intended exclusively as a pathway for travel by foot, stock, or trail vehicle traffic. Vehicles include bicycles, snowmobiles, all-terrain vehicles, and motorcycles.

[U]

UNAUTHORIZED ROAD OR TRAIL – A road or trail that is not a forest road or trail or a temporary road or trail, and that is not included in a forest transportation atlas.

UNEVEN-AGED MANAGEMENT - The application of a combination of actions needed to simultaneously maintain continuous forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. This can be applied to a specific stand of trees or an entire ecosystem.

UNSUITABLE TIMBERLAND – Forest land not managed for timber production because:

- Congress, the Secretary of Agriculture, or the Chief of the Forest Service has withdrawn it from suitability;
- It is not producing or capable of producing crops of industrial wood;
- Technology is not available to prevent irreversible damage to soils productivity, or watershed conditions;
- There is no reasonable assurance based on existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest, as reflected in current research and experience
- There is, at present, a lack of adequate information about responses to timber management activities; or
- Timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives stated in the Forest Plan.

URBAN – ROS classification for areas characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreational activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans are predominant on the site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

[V]

VEGETATIVE MANIPULATION – The forced change of one vegetation type to another. It can be done with mechanical equipment, chemicals, or fire. Usually, this is done to provide timber products, increase forage for livestock, improve scenic views, and/or to improve habitat for wildlife.

VIABLE POPULATION – A population that has adequate numbers and dispersion of reproductive individuals to ensure the continued existence of the species population on the planning area.

[W]

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:

- It is affected primarily by the forces of nature, where man is a visitor who does not remain. It may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.
- It possesses outstanding opportunities for solitude or a primitive and confined type of recreation.
- It is an area large enough so that continued use will not change its unspoiled natural condition.

WILDLAND FIRE SITUATION ANALYSIS – A document that is used to develop and record fire suppression decisions.

WILDLIFE OPENINGS – Openings maintained to meet various foods or cover needs for wildlife. They may contain native vegetation or non-native but non-invasive planted crops, and they may be maintained by burning, disking, mowing, planting, fertilizing, grazing, or applying herbicides.

WOODS ROADS – User-created roads that have never been designed, constructed, or maintained.

ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
AMP	Allotment Management Plan
AMS	Analysis of the Management Situation
ANC	Acid Neutralizing Capacity
AOI	Area of Influence
APCC	Air Pollution Control Commission
ARPA	Archaeological Resources Protection Act
AQRV	Air Quality Related Values
ASQ	Allowable Sale Quantity
ATV	All Terrain Vehicle
AUM	Animal Unit Months
BA	Biological Assessment
Bcf	Billion cubic feet
BCR	Bird Conservation Region
BE	Biological Evaluation
BEIG	Built Environment Image Guide
BLM	Bureau of Land Management
BO	Biological Opinion
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CCF	Hundred Cubic Feet
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CMS	Cheat Mountain Salamander
CRNA	Candidate Research Natural Area
DEIS	Draft Environmental Impact Statement
DFC	Desired Future Conditions
EA	Environmental Assessment
EIS	Environmental Impact Statement
ELT	Ecological Land Type
ELTP	Ecological Land Type Phase
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act

FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FHA	Federal Highway Administration
FMAP	Fire Management Action Plan
FOFEM	First Order Fire Effects Model
FOIA	Freedom of Information Act
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographic Information System
GRPA	Government Records and Proficiency Act
HSH	Highland Scenic Highway
HUC	Hydrologic Unit Code
IDT	Interdisciplinary Team
IMPROVE	Inter-agency Monitoring of Protected Visual Environments
IPM	Integrated Pest Management
IRA	Inventoried Roadless Areas
IS	Interpretive Services
LRMP	Land and Resource Management Plan
LTA	Land Type Association
LTSYC	Long Term Sustained Yield Capacity
LWD	Large Woody Debris
MAGIC	Model of Acidification of Groundwater in Catchments
MBF	Thousand Board Feet
MCF	Thousand cubic feet
MIS	Management Indicator Species
MMBF	Million Board Feet
MMCF	Million Cubic Feet
MNF	Monongahela National Forest
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MP	Management Prescription
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NEPA	National Environmental Policy Act
NF	National Forest
NFC	Need for Change
NFMA	National Forest Management Act
NFS	National Forest System

NNIS	Non-native Invasive Species
NOA	Notice of Availability
NOI	Notice of Intent
NOx	Nitrogen Oxide
NRA	National Recreation Area
NRAO	National Radio Astronomy Observatory
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OA	Opportunity Area
OHV	Off Highway Vehicle
ORV	Off Road Vehicle
OSM	Office of Surface Mining
PILT	Payment In Lieu of Taxes
PM	Particulate Matter
PNV	Present Net Value
ppm	Parts per million
PSD	Prevention of Significant Deterioration
RARE	Roadless Area Review and Evaluation
RFD	Reasonably Foreseeable Gas Development
RFSS	Regional Forester Sensitive Species
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RPA	Forest and Rangeland Renewable Resource Planning Act
RVD	Recreation Visitor Day
SCORP	State Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office
SIO	Scenic Integrity Objectives
SIP	State Implementation Plan
SMS	Scenery Management System
SO_2	Sulfur Dioxide
SO_4	Sulphate
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Non-Motorized
SUP	Special Use Permit
SVE	Species Viability Evaluation
TEP	Threatened, Endangered, or Proposed

TEUI	Terrestrial Ecological Unit Inventory
TMDL	Total Maximum Daily Load
TSI	Timber Stand Improvement
TSL	Traffic Service Level
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VBEB	Virginia Big-Eared Bat
VFD	Volunteer Fire Department
VIEWS	Visibility Information Exchange Web System
VOC	Volatile Organic Compounds
VQO	Visual Quality Objective
WFSA	Wildland Fire Situation Analysis
WSR	Wild and Scenic River
WVAPCC	West Virginia Air Pollution Control Commission
WVDA	West Virginia Department of Agriculture
WVDEP	West Virginia Department of Environmental Protection
WVDNR	West Virginia Division of Natural Resources
WVDOH	West Virginia Division of Highways
WVNFS	West Virginia Northern Flying Squirrel
WVU	West Virginia University

Forest Plan Appendices

Table of Contents

Page No.

Appendix A – Vegetation Management Practices.....A-1

Appendix B – Old Growth B-1

Appendix C – Analysis of the Management Situation Summary.....C-1

Appendix D – Management Indicator Species.....D-1

Appendix E – Communication Sites E-1

Changes to the Forest Plan Appendices Between Draft and Final

Appendix A – In response to comments, we made a few editorial and clarification changes.

Appendix B – In response to comments, we made a few editorial and clarification changes.

Appendix C – We added a section describing the Total Sale Program Quantity on the Forest.

Appendix E – This appendix is new. It has a map and designated users for communication sites on the Forest.

Appendix A

Vegetation Management Practices

Table of Contents

Page No.

Introduction A-1

Silvicultural Systems A-1
- Even-aged Silvicultural System A-2
- Uneven-aged Silvicultural System A-3

Basis for the Allocation of Silvicultural Systems A-3

Management Prescriptions A-5

Harvest Systems for the Forest Timber Types A-6
- Eastern Spruce-Fir Type A-7
- Eastern White Pine Type A-8
- Oak-Pine Type A-9
- Oak-Hickory Type A-9
- Bottomland Hardwoods Type A-11
- Appalachian Mixed Hardwoods Type A-11
- Northern Hardwoods Type A-13

Silvicultural Treatments A-15
- Prescribed Fire A-15
- Site Preparation with Hand Tools for Natural Regeneration A-15
- Herbicide A-16
- Planting A-16
- Vine Control A-16
- Crop Tree Release A-16
- Precommercial Thinning A-16

INTRODUCTION

This appendix discusses various vegetation management practices focusing on silvicultural systems and treatments to be used on national forest lands that are suitable for timber production. The National Forest Management Act (NFMA) of 1976 and 36 CFR 219 (revised July 1, 1997) addresses the use of appropriate vegetation management practices to meet the goals, objectives, and requirements of the land and resource management plan.

The Monongahela National Forest (MNF) has 40 forest types. General information on these types is available in: *Silvicultural Systems for the Major Forest Types in the United States*, USDA Forest Service Agriculture Handbook 445 (1983); Silvics *of Forest Trees in the United States, Volume 1. Conifer and Volume 2. Hardwoods*, USDA Forest Service Agriculture Handbook 654 (1990); *The Scientific Basis for Silvicultural and Management Decisions in the National Forest System*, USDA Forest Service, General Technical Report WO-55 (1989); and *Forest Cover Types of the United States and Canada*, Society of American Foresters (1980). These publications describe geographical distribution of tree species and forest types, silvicultural characteristics, associated vegetation, and practices appropriate for various management objectives. They also have additional information on other resource considerations such as soils, water, recreation, wildlife, special uses, and insect and disease management.

Silviculture can be defined as the art and science of growing trees to meet management objectives. Although silviculture is usually thought of as growing trees for timber production, it is also used to manage vegetation for other resources of the forest including wildlife, water, recreation, and scenery. Growing pressures to provide a variety of resources and products, both commodity and non-commodity, to increasing populations presents challenging opportunities for multiple use management of national forest lands.

SILVICULTURAL SYSTEMS

A silvicultural system defines the management needed to regenerate (or prepare for a regeneration cut) a forested stand of trees using a particular harvest method. Each system is formulated and designed for a specific set of circumstances, objectives, or environmental conditions, yet is dynamic to allow flexibility as situations or scientific knowledge changes. Basic considerations when choosing a silvicultural system include:

1) Characteristics of the tree species and forest types.
2) Environmental features of the site(s) where the trees are growing.
3) Protection or enhancement of other resources such as wildlife, water, soils, etc.
4) Goals and objectives for the area.

The characteristic of the tree species or forest type (such as tolerance to shade, susceptibility to windthrow, adaptability to soil and moisture conditions, and vulnerability to insects, disease, and fire) determines the range of alternative treatments that can be prescribed. Some examples include: 1) a forest type consisting mostly of tree species needing full sunlight will not regenerate and grow under the shade of a forest canopy that occurs when applying the single tree selection harvest method; or 2) a tree species with a shallow root system should not be regenerated with the seed tree, shelterwood, or two-aged harvest method because the residual trees might blow over before a new stand can become established; or 3) a tree species that requires substantial moisture to thrive should not be planted in an area where soil conditions are very dry.

Generally, there are two silvicultural systems that have been used to regenerate forests: even-aged and uneven-aged.

Even-Aged Silvicultural System

This system is designed to create a forested stand where all the trees are about the same age or where the difference in age from the oldest tree to the youngest tree does not exceed 20% of the length of the rotation. The length of the rotation is the time when a stand of trees is mostly in the seedling stage (or immediately after a regeneration harvest) to the time when the stand is ready for a regeneration harvest. For example, in a recently regenerated stand with a 100-year rotation, most of the youngest trees would have an age between 0 and 1 while most of the oldest trees should be no older than 20. When most of these trees reach 100 years of age, the stand is again ready to be regenerated. This system is designed to create or maintain individual stands with trees that are similar in age. Collectively these stands should produce a diverse pattern of age classes across the landscape over time. The purpose of this system is to regenerate tree species generally intolerant or moderately tolerant of shade for a sustainable supply of forest products.

Harvest methods in the even-aged silvicultural system include:

1) Clearcutting with reserve trees,
2) Two-aged,
3) Shelterwood,
4) Seed tree, and
5) Thinning.

The even-aged system tends to mimic moderate to major disturbance events found in nature such as uncontrolled wild fires during periods of drought, hurricanes, tornadoes, ice storms, or insect/disease outbreaks, but in a more controlled manner. The intent is to open the forest floor to more sunlight so trees that need full or partial sunlight (shade intolerant) can grow. These methods require fewer harvest removal entries into a stand (at least 1 but usually no more than 4 within a 100 to 120 year rotation) to increase the growth or regenerate the desired species. The size of a single even-aged regeneration cutting unit has been limited to 25 acres in the existing Monongahela National Forest Land Management Plan, although the NFMA allows a 40-acre size limit for hardwood forest types. The 25-acre limit has been removed in the revised Plan. Exceptions to exceed the size limit need the approval of the Regional Forester.

The **clearcutting method** harvests most or all of the trees within a stand in one removal. Typically some reserve trees are left to meet wildlife habitat or other resource needs. This method requires fewer entries, is less costly to administer, and is considered to be the most economically efficient (over the long term) of all harvest methods. The **two-aged method** harvests most of the trees in the older age class to create a young age class. Harvest entries are usually scheduled 40 to 80 years apart to maintain two distinct age classes within the stand. The **shelterwood method** harvests the mature trees in two or more removal cuts within 3 to 20 years after the initial cut. Both the two-aged method and the shelterwood method are preferred where advanced regeneration is lacking or absent. The **seed tree method** is usually used in conifer stands, with the first cut removing all but 2 to 10 trees/acre of the best growing, seed-producing trees of the desired species to be regenerated. A second cut to remove the seed trees may be done once an adequate number of the desired seedlings have been established. The **thinning method** is an intermediate cut that prepares a stand for a regeneration harvest. This method removes high risk (trees that most likely will not survive until the regeneration harvest is initiated), low quality, diseased, and over mature trees to increase the health, development, and growth of the residual trees in a stand. One to several intermediate cuts may be applied in a stand prior to the regeneration harvest. Thinning is applicable to all of the forest types found on the Forest.

Uneven-Aged Silvicultural System

This system is designed to maintain a high forest canopy cover of trees that have a range of diameter, size, and age classes while continuously regenerating desirable species. A stand is considered to be uneven-aged if three or more age classes are present. The purpose of this system is to regenerate desirable tree species that grow better under the shade of the forest canopy for a sustainable supply of forest products. It is often used to maintain or enhance the aesthetic values of a forested area.

Harvest methods in the uneven-aged silvicultural system include 1) single tree selection and 2) group selection. This system tends to mimic more of the minor disturbance events found in nature such as individual trees or small groups of trees dying from a weather, insect, disease, or age-related event. These events favor the regeneration of those trees that grow better underneath other trees (shade tolerant). Both harvest methods in this system require frequent entries into the stand (usually once every 10 to 20 years) to encourage continuous regeneration and growth of desired tree species. The **selection** or **single tree selection method** harvests individual trees, both large and small, favoring trees such as beech and sugar maple that are tolerant of the shade of the residual forest canopy. The **group selection method** removes all trees within a small area, generally at least ½ acre but typically no larger than 2 acres, within the larger forested stand. This method allows for the growth of some of the more shade intolerant trees species within the uneven-aged stand.

BASIS FOR THE ALLOCATION OF SILVICULTURAL SYSTEMS

The NFMA and its Code of Federal Regulations require identifying forested lands suitable for producing sustainable yields of wood products. The selection of which silvicultural system and harvest method to use on these lands is based on the existing condition of the forested stand, other resource considerations such as wildlife habitat, riparian, visual concerns, proximity to public or private facilities, water quality, etc., and the desired future condition and objectives of the management prescription.

The existing condition of MNF land has been greatly influenced by intensive logging and subsistence agriculture that occurred during the period from mid to late 1800s through the early 1930s. In addition, native inhabitants and early settlers used fire as a tool to manage or clear forest vegetation. More recently the multiple use management activities of the MNF have continued to shape the structure of the forest vegetation on national forest land. The result of centuries of human manipulation and use of the vegetation is the mostly even-aged forest we have today. The large majority of stands on the MNF (84 percent) are over 60 years old. Less than 2 percent of MNF land is in young forested stands less than 15 years old. As the forest continues to age it will become more susceptible to insect and disease outbreaks and other age-related effects.

Table A-1 presents the forest cover types on the MNF, and shows how 40 distinct cover types have been combined into 7 general types that have similar species and responses to silvicultural systems and treatments.

Table A-2 shows the recommended harvest methods by silvicultural systems for the seven forest cover types.

Table A-1. Forest Cover Types

Eastern Forest Cover Type	Forest Type (Combined Data System Code)
Eastern Spruce-Fir	Norway spruce (7) spruce (10) red spruce-balsam fir (13) tamarack (15) white spruce-balsam fir-Norway spruce (16)
Eastern White Pine Including Eastern Hemlock	red pine (02) white pine (03) white pine-hemlock (04) hemlock (05)
Oak-Pine	Virginia pine (33) pitch pine (38) oak-white pine (41,43) oak-yellow pine (45,49)
Oak-Hickory	chestnut oak (52) black oak-scarlet oak-hickory (53) white oak (54) northern red oak (55) scarlet oak (57) mixed oak (59)
Bottomland Hardwoods	river birch-sycamore (72) red maple, wet site (76)
Appalachian Mixed Hardwoods	yellow poplar-white oak-northern red oak (56) white ash (74) black walnut (78) black cherry-white ash-yellow poplar (83) black locust (88) mixed hardwoods (89) quaking aspen (91) bigtooth aspen (93)
Northern Hardwoods	sugar maple-beech-yellow birch (81) sugar maple-basswood (82) red maple, dry site (84) sugar maple (85) beech (86) sugar maple-beech-yellow birch-red spruce (87) birch (96)

Table A-2. Recommended Harvest Methods By Silvicultural System

Eastern Forest Cover Type	Even-Aged System				Uneven-Aged System	
	Clearcut	Two-Aged	Shelterwood	Seed Tree	Single Tree Selection	Group Selection
Eastern Spruce-Fir	P	NR	NR	NR	R	R
Eastern White Pine Including Eastern Hemlock	R	R	R	NR	NR	P
Oak-Pine	R	R	P	P	NR	P
Oak-Hickory	R	R	R	NR	NR	P
Bottomland Hardwoods	R	R	R	NR	P	R
Appalachian Mixed Hardwoods	R	R	R	NR	P	P
Northern Hardwoods	R	R	R	NR	R	R

Codes used in Table A-2:
R = recommended. The harvest method has proven reliable in creating conditions favorable for the regeneration and growth of the desirable tree species in this forest cover type. Additional silvicultural treatments such as site preparation for natural regeneration, vine control, crop tree release, timber stand improvement activities, etc. may be needed to maintain or enhance the presence and growth of desired tree species.

P = possible. The harvest method may need multiple or intensive silvicultural treatments or mitigating measures based on site specific analysis to create conditions favorable for the regeneration and growth of the desirable tree species in this forest cover type. If silvicultural treatments and/or mitigating measures are not successful, there is substantial risk of conversion to another forest cover type. For example, concern for other resources such as riparian may determine the harvest method and result in conversion of the forest cover type.

NR = not recommended. The harvest method is not reliable in creating conditions favorable for the regeneration and growth of the desirable tree species, using standard or special treatments, in this forest cover type.

MANAGEMENT PRESCRIPTIONS

There are seven different Management Prescriptions (MPs) in the 2006 Forest Plan. These prescriptions include different practices with different costs and benefits that result in different future Forest conditions. Timber harvest methods are specified in the Standards and Guidelines for each Management Prescription. This section summarizes the timber harvest methods to meet the objectives of each Management Prescription. Methods may also be designed for smaller areas such as campgrounds. For a full description of the Management Prescriptions and harvest methods, see Chapter III of the 2006 Plan.

Management Prescription 3.0 emphasizes a variety of forest views, and large high quality hardwood trees for sawtimber and veneer, hard mast production, and scenic attributes. Forest areas are a mosaic of stands, predominantly hardwood, that vary in size, shape, and age depending on the silvicultural system applied. Even-aged management practices are used where intolerant species are desired, or where needed

for additional diversity. Uneven-aged management practices may be used where tolerant species are desired.

Management Prescription 4.1 emphasizes the active and passive restoration of spruce and spruce-hardwood communities and the recovery of species of concern found in these communities, a mix of forest products, and management of hardwood communities where spruce is not present or represents only a negligible component of a stand, and research or administrative studies on spruce restoration. On lands determined to be suitable habitat for the West Virginia northern flying squirrel, vegetation management initially would be limited to research or administrative studies to determine effective habitat enhancement techniques for the squirrel. After such studies have demonstrated effective techniques, vegetation management to enhance habitat for the squirrel or other TEP species could occur on a larger scale (see FW standard TE61).

Management Prescription 5.0 emphasizes management of congressionally designated wilderness. No timber management will be applied. Vegetation will follow natural succession.

Management Prescription 5.1 is intended to maintain wilderness attributes until a congressional designation occurs or assigned to the 6.2 management prescription. No commercial timber management will be applied. Vegetation will follow natural succession.

Management Prescription 6.1 emphasizes habitat for wildlife species intolerant of disturbance and a mix of forest timber products. In the revised Forest Plan active restoration of oak communities is also emphasized. Even-aged management practices of thinning and regeneration by the two-aged and clearcutting harvest methods best achieve the desired condition, and is normally used. Other practices may be used as specified in the Standards and Guidelines.

Management Prescription 6.2 emphasis is on maintaining a semi-primitive non-motorized recreation environment. Salvage of dead or dying trees is allowed. The revised Plan allows for the restoration of ecological communities predominantly through natural processes, although some vegetation management may occur. This management might consist of thinning, individual tree selection, or prescribed fire to a level that would not alter the undeveloped character of the area. Additional Forest Service roads would not be constructed.

Management Prescription 8.0 emphasizes the preservation of unique ecosystems for scientific or recreational purposes, areas to conduct research, and the protection of unique areas of national significance. Areas include the NRA (8.1), National Natural Landmarks (8.2), Scenic Areas (8.3), Ecological Areas (8.4), Research Areas (8.5), and Grouse Management Areas (8.6). Silvicultural systems may be either even-aged or uneven-aged, depending upon the management objectives and the silvics of the species involved. Relatively little mechanical vegetation management is expected in most areas. See Chapter III of the Plan for management variations within this prescription.

HARVEST SYSTEMS FOR THE FOREST TIMBER TYPES

Due to the geographic location, elevation differences, and varying weather conditions on the MNF, the forest timber seldom fits the normal Society of American Foresters definitions for specific types. In this area, plant species common to northern climates intermingle with plant species common to southern climates. This results in stands with a great number of species mixes not found in the north or south. Over 30 commercial species occur on the Forest, and it is not uncommon to find 10 to 15 commercial species growing in a 10-acre stand. Under natural conditions, a single species seldom exceeds 70 percent

of the stocking except in very small areas. Generally, a single-species type name will indicate that one species represents 51 percent or more of the total stocking, whereas in a multiple-species type, a group of species will represent 51 percent or more of the total stocking.

Selection of a silvicultural system and related regeneration harvest method depends on many factors, including implementation costs. Uneven-aged management is generally considered to involve higher management and harvesting costs than even-aged systems. The size of openings can also affect the costs and in some cases the value of the future crop. Reducing the size of the area harvested in a single clearcut increases the management and harvesting costs. An additional disadvantage of small clearcuts in hardwood stands is the increased number of border trees that are degraded from epicormic branching. This is due to the greater length of border resulting from the increased number of small area cuttings needed to harvest a given acreage.

The major forest types are described in detail in the Vegetation section of Chapter 3 of the EIS. The descriptions below focus on the appropriate silvicultural systems that may be used in those types.

Eastern Spruce-Fir Type

The eastern spruce-fir type represents about 4 percent of the forested area on the MNF and consists mostly of red spruce although there are some small scattered areas of balsam fir. Red spruce attains its maximum development in the Appalachians, and almost all the red spruce in the central Appalachians is in West Virginia. It has been estimated that red spruce originally occupied almost 470,000 acres in the mountains of northern and eastern West Virginia at elevations generally above 3,200 feet. The intense fires that followed the original c1earcutting around the turn of the 20th century drastically reduced the amount of red spruce. In the spruce areas, the climate is cool and humid with annual precipitation in the neighborhood of 60 inches.

Red spruce grows in association with hemlock, red and sugar maple, yellow birch, pin cherry, beech, and black cherry, but it may grow in almost pure stands. Part of the MNF formerly occupied by red spruce has been planted to Norway spruce due to the better post-planting survival rates and faster growth of this species.

Because the wildfires that reduced the acreage of spruce also reduced the depth of the largely organic soil in which most of the spruce formerly grew, site quality was also reduced. The relatively small acreage of spruce in pure or nearly pure stands generally occupies areas of shallow rocky soils where site quality is fair to poor. Most of the spruce found on better sites occurs as scattered groups or as individual trees in northern hardwood ecosystem. By definition, the eastern spruce-fir type includes stands composed 50 percent or more of spruce and/or fir, but because in most situations on the MNF this type includes stands composed of up to 50 percent hardwood stems, it is considered a spruce-hardwood complex.

Harvest Methods - Since red spruce is shade tolerant, the recommended regeneration harvest methods are in the uneven-aged silvicultural system. The two-aged, shelterwood, and seed-tree methods are not recommended because red spruce is so shallow-rooted that the residual trees tend to blow down before regeneration is established.

Where spruce is managed for improvement of deer and grouse habitat, even-aged management based on c1earcutting narrow patches of approximately 5 acres in size is recommended. Smaller and more numerous c1earcuts would be better for hares and the non-game species or the uneven-aged system may be used with the group selection harvest method. Both uneven-aged harvest methods may be used to secure regeneration, and they are particularly applicable where scenic

values, recreational use, and wildlife that are dependent on a healthy, continuous forest cover are of concern. However, care must be taken on exposed areas not to open up the stand heavily enough to risk wind throw.

Eastern White Pine Type (Including Eastern Hemlock)

White pine is a moderately tolerant, long-lived species that occurs throughout the MNF in pure stands and as a dominant species in association with hardwoods, hemlock, and other pines. It grows under a wide variety of site conditions, with the best development in moist stream bottoms, lower slopes, and protected coves along with eastern hemlock. White pine is able to compete on upper slopes and ridge tops, and holds its own on a dry southerly exposure. Although classified as intermediate in tolerance, in the seedling stage it can survive and grow slowly with as little as 20 percent of full sunlight. However, in order to develop past the seedling-sapling stage, it must eventually be released from overtopping trees. Once it is established, it grows best in full sunlight.

White pine was a major component in the stands that were harvested around 1900, but presently comprises less than 1 percent of the Forest. Wildfires followed the logging and destroyed much of the white pine regeneration; thus most of the white pine stands were replaced by poor quality oak. An effective fire control program has promoted the establishment of natural white pine regeneration in those stands where a seed source exists.

Eastern hemlock is a shallow-rooted, very shade tolerant species. It can grow under dense shade for up to 200 years and still respond well to a release by partial removal of the overstory. Unfortunately, a non-native insect, the hemlock wooly adelgid, is having a devastating effect on hemlock trees throughout the East. Eastern hemlock trees are showing no resistance to this pest. Unless a solution can be found to control this pest, most of the hemlocks on the MNF will die within the next 20 years.

Harvest Methods - There is no known harvest method that will slow the decline of eastern hemlock from the wooly adelgid. Therefore, this discussion will focus on white pine. Growth characteristics of white pine indicate that it can be managed best under even-aged stand conditions, though considerable leeway is allowed in choosing regeneration methods. White pine can be naturally regenerated by clearcutting in blocks and strips, by two-aged, shelterwood, and group selection methods. Single tree selection cutting has not proven to be as successful and the seed-tree method has a higher potential risk of blowdown. Prescribed fire should not be used where there is advance regeneration of white pine if the silvicultural objective is to maintain a white pine component on site.

Clearcutting during, or just after, a heavy seed crop often results in well-stocked stands. Clearcutting in small patches or strips with seed dispersed from adjacent stands is also possible, but the constraints imposed by periodicity of seed crops must be considered. Clearcutting or two-aged harvest methods are recommended when there is advanced regeneration.

The shelterwood method is the most versatile for regenerating white pine. Control of overstory density through a series of shelterwood harvests, or leaving a higher residual density in a two-age harvest with an earlier re-entry harvest, can be used to improve seedbed conditions; to allow accumulation of seedlings over a period of years; to protect seedlings on hot, dry aspects; and to help suppress competition from herbaceous vegetation and hardwood sprouts. Three or more cuts spread over a number of years may be used, but a minimum two-stage shelterwood harvest has provided successful results.

The seed tree method is not recommended because good seed crops occur only every 3 to 10 years. The lower residual basal area of this method would encourage the growth of hardwood seedlings intolerant of shade. Without intensive herbicide treatments the hardwood seedlings would outgrow the white pine.

White pine has been successfully regenerated by the group selection method, however, other methods are more economical to implement.

Oak-Pine Type

The oak-pine type is usually found on the eastern side of the MNF on dry ridges and generally on south- and west-facing slopes. Typically these are some of the least productive sites on the Forest due to lack of consistent moisture. The oak-pine type makes up about 5 percent of the vegetation types found on the MNF. This type is a transitional stage from a mostly pine type to the oak-hickory type. Without silvicultural treatments associated with timber harvests, such as planting with herbicide treatment or prescribed fire (if there are no pine seedlings in the understory), this type will continue to decrease.

Harvest Methods - All even-aged systems can be used to regenerate the oak-pine type. Clearcutting is the preferred harvest method to regenerate the pines since they are intolerant of shade. The two-aged or shelterwood method may be used when oaks are wanted in the next stand but advance regeneration is absent or too small. The first harvest cut will establish new oak seedlings and provide conditions that will allow them or existing small advance reproduction to develop into large sturdy stems. Care should be taken with the two-age harvest method not to leave too many residual trees. The growing crowns of too many residual trees would increase seedling mortality and prevent most seedlings from growing into the overstory. The seed tree method may be used if regenerating mostly pines is the main objective.

For the uneven-aged system, only group selection harvest is suitable for regenerating this forest type since the pines need open areas with substantial sunlight to regenerate and grow. Group selection harvests in the oak-pine type provides a more aesthetically pleasing view to most Forest visitors. Prescribed fire should not be used if there are substantial numbers of existing pine seedlings in the opening or surrounding forested area.

Oak-Hickory Type

Although oak-hickory types occur over the entire Forest at elevations between 1200 and 3000 feet, the oak-dominated stands on good to excellent sites are classed with the Appalachian Mixed Hardwood type discussed elsewhere. This discussion will center on those stands of the oak-hickory complex with oak site indexes below 65.

The five widely distributed upland oaks in this type are white, northern red, black, scarlet, and chestnut. Although less abundant, the hickories are consistent stand components. This forest type comprises about 25 percent of the forested area on the MNF.

Most of the species found in this ecosystem are in the middle range in shade tolerance as exemplified by the oaks and hickories. However, considerable difference exists among species. For example, scarlet oak is relatively intolerant compared to white oak and red maple, while at the extremes, beech is very tolerant and black locust is very intolerant. Red oak is the most demanding oak in terms of site quality and is more abundant on the higher quality sites. Scarlet and chestnut oak are more commonly found at the lower end of the site range.

Harvest Methods - Any silvicultural system applied to the oak-hickory type will maintain a forest stand. However, species composition following cutting will differ by geographic location, site conditions, other species present, and the intensity of the cutting. The choice of silvicultural system and regeneration methods will depend greatly on the objectives of management and the requirements of the species desired. If the management objective is to perpetuate the oaks, even-aged systems will best satisfy the reproduction and growth requirements. Of the four even-aged reproduction methods, the seed-tree method is least useful for reproducing oaks and hickories. The heavy seed is poorly distributed and the slow growing seedlings are not able to compete with the other vegetation that will be present.

The decision whether to use clearcutting, two-aged, or the shelterwood method depends on the potential of existing advance reproduction and stump sprouting to replace the stand. Clearcutting will be successful if combinations of oak advance reproduction over 4.5 feet tall and potential stump sprouts are equivalent to 435 stems per acre well distributed over the area. When adequate advanced oak reproduction is present, the clearcutting method can reverse the naturally occurring conversion of the oak-hickory type to the more shade tolerant hardwood type.

The size of clearcuts is an important consideration but no size is optimum. The maximum size should be determined by stand and site uniformity, esthetic impacts, and wildlife needs. The minimum size is determined by silvicultural requirements, wildlife impacts, and logging economy. Although 0.5 acre openings will satisfy most silvical requirements, a large proportion of the opening will be affected by the surrounding stand. Openings must be at least 2 acres before a substantial area of the opening is not affected by the surrounding stand.

The two-aged or shelterwood method should be used when oaks and hickories are wanted in the next stand but advance regeneration is absent or too small. The first harvest cut will establish new oak seedlings and provide conditions that will allow them or existing small advance reproduction to develop into large sturdy stems.

Using the single tree selection method in the oak type will not perpetuate the quantity of oaks present now or other intolerant species. Harvesting single trees as they mature and cutting to maintain the specified size (age) class distribution results in an essentially complete crown cover at all times. Although oak seedlings will become established, they will be unable to survive in sufficient numbers and grow into the sapling and larger size classes. Furthermore, as the existing pole and small sawtimber-sized oaks pass through succeedingly larger size classes and are harvested, the sapling and small tree component will become dominated by whatever shade-tolerant species are present. Eventually the entire stand will be composed of these shade-tolerant species.

Group selection may be a successful regeneration method when certain conditions are met. Initial 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 advance reproduction or as stump sprouts. However, reproduction growth will be retarded near the opening edges, with maximum growth occurring only in the central part of the opening not influenced by the surrounding stand. Although group selection is an effective method, controlling the amount of area regenerated and regulating the rate of cutting for sustained yield are difficult and expensive. The many small clumps of different age classes make cultural treatments and harvesting operations complicated and costly. The smaller openings allow heavier browsing by deer which may slow or prevent the oaks from growing into the overstory.

Bottomland Hardwoods Type

The bottomland hardwood forest types of river birch-sycamore and red maple (wet site) comprise less than 1 percent of the forest vegetation types on the MNF. However, numerous forest types within the Appalachian mixed hardwood forest cover type make up the rest of the floodplain and riparian forest. Most of the desirable species that grow in this type are intolerant or moderately tolerant of shade, with the exception of beech, maple, and hemlock. A higher percentage of seeds germinate on these sites because soil moisture remains relatively high throughout the year. However, animals, birds, and insects use large amounts of seeds.

Most hardwood tree species that grow near streams can survive minor flooding during the growing season and longer durations of flooding during the dormant season. The majority of flooding along streams in the MNF is usually of short duration (less than 1 week) since most of the national forest land is at the head of the watersheds of several major river systems.

Harvest Methods - The even-aged silvicultural system is recommended in this type with the exception of the seed tree harvest method. The seed tree harvest method is not necessary since there is an abundance of seeds in the soil with good germination and survival potential (if heavy deer browsing is not a problem). Seeds can also be transported downslope by water during flooding events. Stump sprouting from cut hardwood trees will contribute to the regeneration of desirable species.

Either group selection or single tree selection may be acceptable harvest methods depending on the objective. Single tree selection would favor shade tolerant species such as beech and maple but these trees are not the well suited for large woody debris in streams since they decay fairly rapidly. Hemlock trees (also shade tolerant) are excellent for large woody debris. The wooly adelgid may prevent small hemlocks from growing large enough to provide this resource in most areas, although abundant debris may occur in the short term from adelgid-related mortality in larger trees. The group selection harvest method would favor some of the more intolerant and moderately tolerant tree species that would also provide more durable large woody debris (with the exception of species like buckeye, aspen, yellow poplar, and cucumber tree, which decay rapidly).

Concerns about stream sedimentation and the lack of large woody debris will limit the amount of harvesting near stream channels on MNF land. Many streams are still recovering from human disturbances such as agriculture (both pre- and post-settlement), grazing, and the railroad construction and subsequent logging that occurred around the turn of the 20th century.

Appalachian Mixed Hardwoods Type

Appalachian mixed hardwoods, commonly called cove hardwoods, is a forest complex found in rich, moist locations and is characterized by great diversity in composition. This type represents about 40 percent of the Forest and is found in topographic coves, on lower slopes with a northern or eastern aspect, and on gentle terrain. Stands are characterized by a large number and variety of plant species. Overstory composition may range from nearly pure stands of northern red oak or yellow poplar to typical mixtures of 20 or more commercial species. Among the more important trees are: yellow-poplar, sugar maple, northern red oak, hickories, black cherry, white oak, basswood, aspen, cucumbertree, white ash, red maple, sweet birch, beech, elm, and black locust. The mixtures vary with site quality, past treatment, elevation, and latitude. Conifer species can include white pine, red spruce, and hemlock.

Sources of reproduction in these stands include buried seed, stump sprouts, root suckers, and advance regeneration. Seed of several species--such as yellow poplar, basswood, white ash, black locust, and

black cherry--remain viable in the forest floor for at least three winters. Acorns and seed from maples, birches, and beech commonly remain viable over one winter. Nearly all hardwood species sprout vigorously especially when young, but as stems mature, sprouting decreases. Advance regeneration of tolerant species such as maples and beech occurs under dense canopies. Advance oak regeneration composed of seedlings an inch or more in base diameter, with a well-developed root system, is generally necessary for satisfactory growth after release. Logging usually does not kill advance regeneration because the damaged stems sprout vigorously. During their early years, sprouts grow rapidly; often dominating other forms of reproduction, and can produce high-quality trees for a number of species. Prolific sprouters include oaks, yellow poplar, basswood, black cherry, red maple, black locust, and beech.

Reproduction of intermediate tolerant species usually follows a moderate opening of the canopy and can persist for several years. Seeds of white ash, yellow poplar, black cherry, and basswood germinate when favorable conditions of light, temperature, and moisture are created by canopy removal. Because of the abundance of different species in these stands, it is rare that seed crops do not occur for several of these species.

Among major Appalachian mixed hardwood species, shade tolerance ranges from very tolerant beech, hemlock, sugar maple, and basswood to the intermediately tolerant oaks, hickories, birches, and white ash to intolerant black cherry, black locust, and yellow-poplar. Most intolerants and some intermediates will not survive long under a dense canopy. Sugar maple, beech, and, to a lesser degree, oak saplings and pole-size trees can persist for a long time under a dense canopy and then respond to release. Many intermediate and intolerant species in these mixed hardwood stands developed in large openings due to windthrow, fire, snow, ice, logging, etc.

Harvest Methods - In Appalachian hardwood stands there are a number of species that reproduce successfully following any regeneration cutting, thus reproduction usually is not difficult. However, species differences in shade tolerance and other silvical characteristics, combined with site variation, lead to changes in species composition. Species composition is affected by the silviculture and harvest systems used.

Even-aged and uneven-aged silvicultural practices have been used to manage Appalachian hardwood stands. Even-aged practices such as clearcutting result in a greater variety of species and a higher ratio of intolerant to tolerant species than uneven-aged practices. The intolerant to intermediate species usually are fast-growing, high-value trees such as black cherry, red oak, white ash, yellow-poplar, and basswood. Clearcutting generally is recommended as the optimum method to regenerate these stands. Both intolerant and tolerant species are reproduced by this method, though the month in which a clearcut is applied can influence the amount of regeneration due to late seed germination. Planned clearcuts provide stands of differing ages in the forest, with each stand contributing wildlife food and habitat that allows a variety of wildlife to prosper.

Two-aged and shelterwood harvests include removing trees in the stand in two or more cuts, usually over a period of 3 to 20 years for shelterwood and 40 to 80 years for two-aged. The higher the residual basal area that is left after the first harvest removal, the sooner the next harvest should occur. For example, if the residual basal area is 50 square feet per acre after the first harvest, then the next harvest entry should be no more than 5 years later. The reason for this is with a high residual basal area the crowns of the trees will close faster and shade out the intolerant tree species that are the objective of using the shelterwood or two-age harvest method. These methods may be used for reproducing species of intermediate tolerance such as oaks and are often recommended where there is no desirable advance regeneration. The effect of these methods on the regeneration depends on the density and duration of the residual overstory. Loss of residual stem quality from epicormic branching may occur.

Regeneration by the seed-tree method is seldom used or needed in Appalachian mixed hardwood stands. Under most circumstances, regeneration comprising the new stand is already established or will become established the first growing season after cutting, regardless of the presence or absence of seed trees. Where seed trees are left in the stand, windthrow and loss of stem quality from epicormic branching are major concerns.

Where uneven-aged practices are used, the tolerant, slow growing, less valuable commercial species such as beech and maple, eventually dominate. Frequently, noncommercial and shade tolerant species such as dogwood or striped maple are found in the understory.

Single tree selection results in the least disturbance to the forest canopy and is used where a nearly continuous forest canopy is preferred, or when stand and site disturbance must be minimized. However, the single tree selection method should not be used if intolerant species are desired because this practice encourages shade tolerant trees and shrubs. Eventually, the mixed character of the Appalachian hardwood stand will be reduced by the single tree selection method to a few commercial and shade tolerant species, such as sugar maple, beech, and red maple.

Group selection provides a mixture of desirable tolerant and intolerant species in mixed hardwood stands, if the openings are at least 0.5 acre, but this system is difficult to apply at periodically short intervals. If the openings are small and well-scattered, aesthetic qualities remain high and excellent wildlife habitat, forage, browse, edge, and mast-producing trees are produced. However, epicormic branching may reduce the quality of the border trees. Epicormic branching may be reduced by leaving smaller trees around the perimeter of the opening to shade the boles of the larger trees. High deer populations may prohibit regeneration success due to heavy browsing pressure in these small openings.

Northern Hardwoods Type

This type, comprising about 22 percent of forested area on the MNF, is normally found at higher elevations. At its highest limits, the type may merge with red spruce or may occupy areas where red spruce was formerly abundant but has been depleted by cutting and fire. When found at lower elevations on good and excellent sites, this type often merges with Appalachian mixed hardwoods and, depending on the cutting practices, may replace the Appalachian mixed hardwood type or be replaced by it. Repeated cuttings, wildfire, and past land use have created numerous combinations of stand conditions, age classes, and species.

Sugar maple and yellow birch are the most desirable hardwoods for timber production and also contribute to pleasing fall colors. Sugar maple, beech, and yellow birch are the major species and together comprise most of the stocking. Associated in varying mixtures are red maple, hemlock, black cherry, basswood, white ash, and red spruce. Noncommercial understory species include striped maple, hobblebush, eastern hophornbeam, witch hazel, pin cherry, viburnums and serviceberry.

All important, commercial species characteristically reproduce from seed, and some also reproduce by vegetative means. The yellow birch seeds prolifically, producing reasonably good crops every other fall. White ash, sugar maple, and beech produce good crops at intervals of as long as 5 to 8 years. Red maple produces abundant seed nearly every spring and sprouts prolifically from stumps of poletimber and small sawtimber size trees. Sugar maple, beech, and yellow birch sprout reasonably well from stumps of small trees. Beech sprouts on larger stumps generally are short lived but it root-suckers prolifically, especially following cutting. Striped maple also sprouts prolifically while brambles and pin cherry reproduce from seed buried in the upper soil horizon for as long as 100 years, though numbers decline sharply after 40 years.

Species in this type differ in shade tolerance, longevity, and growth rate. Yellow birch, white ash, and red maple are all intermediate in shade tolerance, but while the latter two have moderately fast growth rates, yellow birch has only a moderate growth rate. Sugar maple, beech, and red spruce are shade tolerant, long-lived species with moderately slow growth rates. Hemlock is also shade tolerant and long-lived and while it grows rapidly in diameter, it grows slowly in height. Tolerant small trees and shrubs such as striped maple, eastern hophornbeam, and hobblebush affect silvicultural procedures. Pin cherry, a very shade-intolerant small tree, can be a serious competitor in clearcuts.

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. Red spruce and hemlock are more commonly found on wet or excessively well-drained sites. These species and the other long-lived tolerant species, when established, can respond to release after long periods of suppression. Yellow birch needs overhead light and a seedbed of moist humus or mineral soil for optimum early establishment and development. Yellow birch must become dominant early in life to survive to maturity. The capacity of birch and other less than tolerant species to respond to release after suppression is moderate to poor.

Harvest Methods - The choice of silvicultural systems and intensity of management in the northern hardwood type is influenced by species composition, habitat, site productivity, local markets, and objectives for the area. If the objective is to maintain or increase the stocking of intolerant and intermediate species, clearcutting is the optimum method to use because it allows these species to outgrow their competition.

In northern hardwoods, many seedlings and saplings grow under the shade of mature trees. They often include a variety of species and provide a primary source of regeneration for the new stand following clearcutting. Additional seedlings usually become established after clearcutting so that regeneration includes both trees that developed in advance of the cutting and ones from seeds that germinated later. This combination provides for a mix of species, including ones that will not survive under the shade of older trees. Yellow birch and red maple can develop quickly from seeds dispersed into newly created forest openings, especially if seeds fall onto mineral soil or decayed organic material. Clearcutting normally will increase the abundance of yellow birch, black cherry, white ash, and yellow-poplar. All of these need light and grow poorly under shaded conditions.

Stump sprouts grow rapidly in clearcuts and if the stumps are low, the sprouts develop into satisfactory trees. Because sprouting capacity decreases as trees age, sprouts seldom dominate regeneration following clearcutting of stands more than 75 years old.

The two-aged and shelterwood methods regenerate stands of trees all having about the same age. They establish a crop of new seedlings and allow them to get a good start before all the older trees are removed. These methods require at least two harvest removals on the same area in a rotation length. The initial harvest of some of the older trees allows sunlight to reach the ground. This added light stimulates growth of seedlings after germination, then a second cutting removes the remaining older trees. In the two-aged method the harvest re-entry is usually 40 to 80 years after the initial harvest. The residual basal area in a two-age harvest should be from 15-25 square feet of basal area per acre. The lower residual basal area is necessary due to the length of time to the next entry to allow the intolerant and moderately tolerant species to grow into the canopy before the residual crowns close and suppress the growth of the regeneration. The shelterwood method requires a re-entry harvest usually within 3 to 20 years after the first entry, allowing a higher residual basal area of 30 to 50 square feet per acre. The longer the time between the initial entry and the second entry, the lower the residual basal area should be.

The seed-tree method has no value in the northern hardwood type because the new stand generally originates from seedlings and saplings that were established prior to harvest. In addition, most species in this type produce abundant seed that will store in the leaf litter for 3 to 10 years, thus seed trees are unnecessary.

If the objective is to move the stand towards climax species, then the uneven-aged system will accomplish this in the northern hardwood type. Stands managed by the single tree selection method are harvested at regular intervals (usually every 10 to 15 years) to remove some of the trees. At each harvest, mature trees are removed to make space for new seedlings to develop and also, younger trees are thinned. These cuttings remove single trees from across the stand, leaving behind well-distributed immature ones. The combination of new, young, and older trees makes the stand uneven-aged.

Single tree selection works in the northern hardwood type because sugar maple, beech, hemlock, and red spruce can grow under partial shade and develop in the small openings created by harvesting of a single mature tree. Seedlings of black cherry, yellow poplar, white ash, yellow birch, basswood, and red oak will not normally survive in such shade. Their numbers will decrease with each subsequent harvest, unless the stands are cut heavily.

The group selection method will create larger openings in the forest canopy than the single tree selection method so more sunlight can reach the ground. Species that cannot survive and grow well under partial shading can develop in these openings, so the regeneration will often include more yellow birch, black cherry, white ash, and yellow-poplar seedlings than are found under single-tree selection. By combining group removals and thinning of immature trees, the cuttings maintain a proper mix of tree sizes and ages to provide for regular harvests.

SILVICULTURAL TREATMENTS

Silvicultural treatments may include single or multiple actions of site preparation, reforestation, and timber stand improvement activities within a stand. Some of the more common silvicultural treatments on the MNF are described below.

Prescribed Fire

Prescribed burning can be used to achieve one or more objectives including reducing the risk of hazardous wildfires, controlling understory vegetation, restoring fire dependent species or ecosystems, and improving forage for wildlife. An example would be to use prescribed fire to enhance or restore oak regeneration by killing tops of competing vegetation. Oak seedlings put most of their early growth as seedlings and saplings in their roots and are able to re-sprout after fires by out-competing other seedlings and saplings that put most of their early growth in their tops.

Site Preparation with Hand Tools for Natural Regeneration

The objective of site preparation is to enhance germination, sprouting, and survival of natural regeneration. Site preparation includes cutting down residual trees between 1 and 5 inches in diameter during or immediately after a regeneration harvest. Normally red spruce, hemlock, white pine, dogwood, serviceberry, and shrub species that produce mast for wildlife are not cut. This treatment opens up the forest floor to increased sunlight to improve seed germination potential, promotes sprouting of cut trees, and reduces shading that could inhibit the growth of shade intolerant and moderately tolerant species.

Herbicide

Similar to prescribed fire, herbicides can be used to control competing vegetation, allowing limited nutrients and moisture to be more readily available to improve growth of the remaining vegetation. Herbicides registered for forest use are usually applied to individual stems by cut stump treatments, stem injection, or basal spray. Foliar spraying or soil application methods may also be used. All treatments would follow label guidelines and would be supervised by a State-certified applicator. In some cases, especially where interfering understories of fern, grass, beech root sprouts, or striped maple have become established on gentle slopes, mechanized equipment or broadcast spraying may be used. Herbicides may also be used along roads and utility corridors.

Planting

Although hardwood forests normally regenerate naturally after a timber harvest occurs, planting is sometimes used in stands to improve species diversity. Competition for sunlight, moisture, and soil nutrients is intense when a stand is regenerated. To improve the potential for planted seedlings to grow into and be retained as a viable component within a stand, protective tree shelters may be used to improve survival. A tree shelter acts like a mini greenhouse, providing increased temperatures over longer time periods than in open conditions, resulting in increased survival rates and overall growth of the planted seedlings. Tree shelters are also put in place to protect the seedlings from deer browsing.

Vine Control

Vines interfere with the growth of trees, causing decreased growth, deformity, and broken tops. Broken tops allow entrance for insect and diseases, decreasing the vigor of a stand. Vines are severed with cutting tools near the ground and about 4 feet above the ground leaving a gap to deter any sprouting vines from utilizing the dead vine to grow again into the crowns of the surrounding trees.

Crop Tree Release

This treatment may be used to achieve a variety of objectives including: to restore diversity of species within a stand; to develop mast producing trees for wildlife; increase commercial value; and/or to improve scenic quality. Criteria should be developed to meet specific objectives in selecting 30 to 50 trees per acre of good health and form to retain in the stand. These selected crop trees are released from competing vegetation by cutting or girdling nearby trees that touch the crowns of the selected trees. Cut or girdled trees that are of little commercial value or provide valuable wildlife habitat may be left on site.

Precommercial Thinning

This treatment is similar to the thinning harvest method except the cut stems do not have enough value to support a commercial timber sale. Trees that are of low vigor, are poorly formed, or diseased, and species with little commercial value such as fire cherry and striped maple, are cut and left on site to reduce competition for sunlight, water, and nutrients for the residual trees.

Appendix B

Old Growth

Table of Contents

Page No.

Introduction B-1

Old Growth Definitions and Criteria B-2

Existing and Potential Old Growth on the MNF B-4
Existing Old Growth B-4
Potential Old Growth as a Result of Alternative 2 Modified B-5

Identification and Distribution of Old Growth Areas B-7
Ecological Considerations when Identifying Future or Potential Old Growth B-8

References B-9

INTRODUCTION

This appendix describes the current conditions and potential for old growth on the Monongahela National Forest (MNF), and the approach the Forest is taking to manage old growth. A careful reader of the 2006 Forest Plan will notice that the term "old growth" rarely appears. There are various reasons for its absence. The principal reason is that old growth is not managed as a separate entity or distinct resource, but rather it is integrated into the larger spectrum of vegetation management. On the MNF it currently represents a minimal part, comprising less than one percent of the entire Forest. Where it does exist, old growth is limited to small, scattered patches within a larger matrix of primarily 70- to 90-year-old forests.

Forested vegetation can be classified by successional stage and further distinguished by age. The Forest Plan recognizes 3 successional stages (early, mature, and late); the last of which features old large trees and large standing dead and down trees. It is only during the late successional stage whereby old-growth conditions, as described in this appendix, can develop and be maintained. Viewed in this context, old growth represents the "oldest" subset of the late successional stage, which is one of many types of vegetation the Forest manages.

Over the past 20 years there has been a great deal of nation-wide interest and debate regarding the character and value of old-growth forests. Indeed, the term "old growth" has taken on a life of its own, with numerous definitions inspiring even more perceptions and opinions about its true nature. To many the term conjures up images of strolling through an open forest of towering trees filled with abundant wildlife. Some environmentalists and conservation biologists have touted these forests as the last bastions of biodiversity on the planet. Others consider old growth a waste of good timber and a breeding ground for insects and diseases.

As land managers, the Forest Service neither rhapsodizes nor condemns old growth, but rather evaluates what it means in terms of multiple-use management, including contributions towards biodiversity. Because forests grow older through natural succession, there is always the potential for stands to develop old-growth characteristics once they have reached the late successional stage. In order for forest stands to reach this stage, they must be able to grow older, typically well beyond 100 years of age, without large-scale natural or human-induced events that would remove the old/large tree component. From the land manager's perspective, the late successional stage has the greatest probability of occurrence in areas receiving relatively little or no vegetation management.

The Environmental Impact Statement that accompanies this Forest Plan states where these areas of little or no vegetation management are most likely to occur (i.e., areas providing the greatest potential for future old growth) and analyzes the effects that would occur on various resources. Generally speaking, these areas would have minimal effects on soil disturbance and erosion, water quality, and backcountry recreation opportunities. On the other hand, they would have fairly major effects on timber growth and yield, associated economic outputs, and opportunities for motorized recreation.

Old-growth forests can display a wide variety of vegetative conditions, depending on factors such as species composition, stand age, environmental conditions (climate, geology, topographic position), and soil productivity. The appearance and function of old growth differs dramatically depending on forest type (e.g., spruce-fir vs. oak-pine vs. mixed mesophytic). Some forest types do not support much plant or wildlife diversity no matter how old they grow. Others can be species rich at a fairly young age and continue to add diversity and complexity as they grow older. For virtually all forests, however, time is a critical factor in the attainment of old-growth characteristics. At the national and Forest levels, certain characteristics that are fairly common to old-growth forests have been identified. Characteristics for old growth on the Monongahela National Forest (MNF) are described below.

OLD GROWTH DEFINITIONS AND CRITERIA

The 1986 MNF Forest Plan and supporting analysis included two definitions of old growth, one more conceptual in nature and one more operational.

In the 1986 Forest Plan (page 55), old growth is defined as: "Stands with large, mature or over-mature trees (both healthy and decadent) comprising a plurality of stocking, usually having a multi-layered canopy in trees of various age classes. Stands include dead trees and relatively large amounts of decaying material on the forest floor."

In the Glossary for the Final Environmental Impact Statement for the 1986 Forest Plan (page E-22), old growth is defined as: "A stand of trees older than normal rotation age for that timber type. Old growth provides important wildlife habitat conditions not normally found in younger stands."

Simply defining old growth as a stand of trees older than normal rotation age, while being technically accurate and easy to query in databases, does not adequately capture the complicated aspects of old-growth management. In determining where, when, and why to manage stands as future or potential old growth, the ecological, landscape, and social aspects of old-growth forests need to be considered.

In 1995 the Forest reviewed the 1986 Forest Plan intent for determining old-growth areas (DeMeo et al. 1995 internal report). This report provided a set of criteria to use in identifying areas as old growth, in accord with generic guidelines developed at the national scale. The criteria, described below, are: age, species composition, structural diversity, woody debris, gap formation, patch size, and adjacency.

Age. Age is an important component of an old-growth definition, as it helps explain forest stand origin and dynamics. While large, old trees epitomize an old-growth ecosystem and may be the ultimate goal of old-growth management for wildlife species or scenic values, a mix of young-, mid- and old-aged trees typically comprise old-growth stands. Old-growth conditions often develop through ongoing gap-phase dynamics as stands age and move toward uneven-aged or multi-aged structures.

Species Composition. Species present in old growth vary by forest type, dependent on a number of environmental (site) and disturbance factors. Most importantly, species composition greatly controls the structure and appearance of old growth. For example, in moist nutrient-rich coves sheltered from wind and fire, large, long-lived, moisture-loving trees (yellow poplar, white ash, and basswood) can develop. In contrast, dry, nutrient-poor ridge tops might only support smaller-sized, fire-adapted species (oaks and pines). In general, shade-intolerant, pioneer species such as black locust, aspen, or hawthorn are absent or a minor component in older forests on the MNF. Old-growth forests are described by the tree species that either currently exist or are expected to dominate the site over time.

Structural Diversity. Old-growth stands are normally characterized by multiple tree layers with diverse understories of forbs and shrubs. Tree diameter and height can range greatly according to component species and site conditions. For example, tree and canopy development will be slower on dry, nutrient-poor sites than on moist, nutrient-rich sites. The distribution of tree sizes in an old-growth forest is often skewed due to its complex history of stand dynamics. Knowledge of past disturbances and stand origin, coupled with age data, can help determine if size distribution represents true uneven-aged structural development.

Woody Debris. Old-growth forests are often characterized by large-diameter logs on the forest floor and standing dead trees called snags. These components are vital to old-growth function as they

provide habitat for flora, fauna, and fungi that perform much of the decomposition and nutrient turnover. Standing dead trees also provide habitat for larger fauna such as cavity-nesting birds and mammals. Woody debris may not be abundant in some cases; for instance in fire-adapted old-growth forests that continue to experience recurrent fire.

Gap Formation. Old-growth forests in pre-settlement West Virginia probably regenerated through combinations of frequent, small-scale wind events (Runkle 1982), low intensity surface fires, and insect or disease outbreaks. Large stand-replacing events, like blowdown from microbursts or hurricanes, occurred but were much less frequent. Small-scale disturbances resulted in canopy gaps that released growing space, which spurred tree regeneration and eventual gap closure. Over time, a shifting mosaic of multi-aged groups of trees developed across the landscape.

Patch Size. Considerable research has focused on the minimum area necessary to maintain viable old-growth structure and function (Ranney et al. 1981, Hansson 1992, Smith 1989). A small patch may contain the species composition, structural diversity, canopy layers, and other characteristics of old growth and yet lose viability over time because it is too small to maintain itself. For example, large windstorms can destroy the entire overstory.

Large patches (greater than 10,000 acres) should ensure the integrity of ecological functions and the distribution of old-growth conditions at the sub-regional scale. Medium-sized patches of old growth, ranging from 150 to 10,000 acres, can supplement the spatial distribution of large-scale patches across the landscape. Small patches typically protect existing old growth. They can also represent forest communities that are underrepresented or that normally occur in isolated fragments, or they can serve to connect or augment large or medium patches.

Large patch sizes have a higher proportion of interior conditions, and small patch sizes tend to have proportionately more edge, which is the boundary between two ecosystem states. Edge generates microclimatic and biological effects, such as increased sunlight, wind velocity, plant species invasion, and altered habitat for birds (Temple 1984) across an edge width. Edge width based on sunlight penetration in certain eastern forests is about 15 meters (Ranney et al. 1981), but about 100 meters based on bird habitat requirements (Temple 1984). Forest patch size minus the edge width gives interior area. Interior area is important in assessing old-growth viability, as areas with little or no interior can be substantially altered by relatively small disturbance events that result in loss in of patch integrity and function.

Adjacency and Scale. Vital to old-growth management is consideration of neighboring forest stands relative to the size of old-growth patches. In the eastern United States, old-growth patches are not widely distributed across the landscape. One objective for managing old growth is to identify and protect remnant patches so that over time they remain viable. A related objective is to promote future old growth by identifying older adjacent second-growth patches that can eventually develop into old growth and thereby expand the effective size and function of the remnant patches.

This list of seven criteria may be used as a conceptual definition for old growth on the MNF to determine if an existing area should be considered old growth, or the list may be used as guidelines for designating stands as future old growth. We do not expect to find large areas of true old growth on the Forest because of past land management. An arbitrary age, patch size, amount of woody debris, or other measure of the criteria listed above should not be used to define old growth. For example, a 100-year-old stand may not be identified and managed as future old growth if it is a small isolated patch surrounded by private land, but an 80-year-old stand adjacent to wilderness might be identified as future old growth because it has better potential for contributing to a large old-growth patch in the future. Definitions of old growth may

continue to be refined, even described for different forest types and disturbance regimes. These changes would be incorporated in the Forest's management of existing and potential future old growth areas.

The USDA Forest Service, Eastern Region has not developed operational definitions of old growth as has the Southern Region. Instead, the Eastern Region has compiled information on old-growth forests by forest type groups for reference (Tyrrell et al. 1998). The Southern Region operational definitions include minimum ages, minimum basal area per acre, and largest tree diameter at breast height by broad forest type groups (USDA Forest Service, Southern Region 1997). With these definitions, Southern Region Forests used database queries to identify stands or patches meeting the criteria. Not having operational definitions of old growth available, the MNF can continue to identify existing old-growth patches through project-level analyses, other analyses, searches initiated by the Forest Ecologist, or through public contacts. These candidate or possible old-growth areas would be compared to the data and descriptions of other known old-growth forests as described in Tyrrell et al. (1998) and applicable Southern Region definitions.

EXISTING AND POTENTIAL OLD GROWTH ON THE MNF

In order to see how the MNF intends to provide for old growth, it is important to understand the two different types of old growth that are considered: 1) existing old growth, and 2) potential old growth. Existing and potential old growth are described in more detail below.

Existing Old Growth

Existing old growth on the MNF is limited to small, scattered patches within a larger landscape of 70 to 90 year old forests. The value in protecting these patches is in the protection of the rareness of the older trees and associated communities, even though these patches may continue to be influenced by surrounding younger forests.

Few areas are considered true old growth on the MNF due to turn of the 20th century logging and associated burning. As noted above, time is a critical element in the development of old growth characteristics, and not enough time has elapsed on the MNF to allow for old growth characteristics to manifest themselves in most cases. The remaining known old-growth areas have been identified and protected by Botanical Area, National Natural Landmark, or Scenic Area designation, and are managed through specific Forest Plan direction. These areas total an estimated 318 acres and include the Gaudineer Scenic Area (140 acres), Shavers Mountain Spruce-Hemlock stand (68 acres), Virgin White Pine area (13 acres), North Fork Mountain Red Pine Botanical Area (10 acres), and the Fanny Bennett Hemlock Grove (70 acres). One other area has been documented on the Forest—the North Spruce Mountain old growth site of an estimated 17 acres. Other old-growth patches may exist in areas already protected from active management such as Cranberry Bogs and the Smoke Hole-North Fork Mountain area of the National Recreation Area. Undoubtedly there are small areas on the Forest like this where timber harvest did not take place due to poor access, terrain, or timber quality.

Gaudineer Scenic Area is also a National Natural Landmark. Direction for this area includes a goal to "maintain virgin forest characteristics" and standards that restrict timber products from being removed from the area and certain types of vegetation management. This area provides a fine example of what old growth looks like in a spruce-hardwood ecosystem. Large trees are present but not in great abundance, as many older trees have died and fallen to the ground, creating forest gaps and a profusion of logs, broken snags, and woody debris that make off-trail walking difficult.

The Shavers Mountain Spruce-Hemlock Stand is a National Natural Landmark. Management direction includes a goal to "maintain the old growth/mature forest ecosystem" and standards that prohibit timber harvest, road and facility construction, livestock grazing, and motorized use. Much of this area is also inside the Otter Creek Wilderness, which has similar prohibitions.

The Virgin White Pine Botanical Area has a goal to "emphasize the preservation of virgin forest" and standards that prohibit commercial timber harvest, road and facility construction, and firewood gathering.

The Fanny Bennett Hemlock Grove and North Fork Mountain Botanical Areas have similar goals to, "Emphasize the preservation of virgin forest", and standards that prohibit commercial timber harvest, road and facility construction, and motorized travel.

Virtually all of the existing old-growth patches on the MNF are small and adversely affected by surrounding second growth or open edge, which may beg the question why the Forest strives to protect them. The value in protecting these patches is in preserving the rareness of the stands of older trees and their associated communities, which adds to the overall diversity of the Forest. They may also contribute to larger patches of old growth as the forests around them age and develop old-growth characteristics.

Potential Old Growth as a Result of Alternative 2 Modified

Potential old growth is defined as forest stands or patches that currently do not exhibit the suite of old-growth characteristics described above, but that have the potential to develop the characteristics in a reasonable length of time if left unmanaged. Some areas, such as fire-adapted oak forests, may benefit from management activities that emulate natural processes, such as prescribed fire and thinning, in order to achieve desired ecological conditions. All areas would likely continue to age and change through predominantly natural processes, thereby providing the potential for old-growth characteristics to develop in the future. The largely unmanaged states are identified in the 2006 Forest Plan through a combination of Management Prescription (MP) allocation and management direction.

Management Prescriptions. Management Prescriptions where active manipulation of vegetation is not allowed or is expected to be minimal include MP 5.0 (Designated Wilderness), MP 5.1 (Recommended Wilderness), MP 6.2 (Backcountry Recreation), and many MP 8.0 areas, including National Natural Landmarks, Scenic Areas, Ecological Areas, and Candidate Research Natural Areas. All of these MPs have management direction that prohibit or restrict timber harvest and new road construction. Estimated acres for these areas are displayed in Table B-1.

Patch sizes for MP 5.0, 5.1, and 6.2 units are generally over 5,000 acres each, with many exceeding 10,000 acres. The 10,000-acre and above areas correspond to, and can function as biological reserves, as described in the Ecological Diversity analysis in Chapter 3 of the Forest Plan Revision EIS. The numerous 8.0 areas are mostly small- to medium-sized patches (Table B-1), but several are adjacent to a 5.0, 5.1, or 6.2 MP units, which have the additive effect of expanding the old growth potential of each area. Also, there are two SPNM areas within the Spruce Knob-Seneca Creek NRA that are a combined 21,500 acres. These areas would also feature little or no vegetation management.

Management Direction. Within the MPs that promote commercial timber harvest and allow new road construction (MPs 3.0, 6.1, and portions of 4.1), there are many areas where these activities are prohibited or limited by Forest Plan standards and guidelines due to other resource concerns. These restricted areas include:

- Buffer areas around stream channels, lakes, and wetlands that extend anywhere from 25 to 100 feet around these features. See Forest-wide direction in the Soil and Water section.
- Corridors for eligible Wild and Scenic Rivers that have a Wild or Scenic classification.

- Suitable habitat for West Virginia northern flying squirrel, a federally listed species.
- Primary range, hibernacula and key areas for Indiana bat, a federally listed species.
- Corridors or buffer zones for areas with a Very High Scenic Integrity Objective.

Direction for these areas of restricted management can be found in a number of resource sections of the Forest-wide Management Direction section in Chapter II of the Forest Plan. Estimated acres for these restricted areas are listed in Table B-1, below.

In additions to the areas listed above, the MPs associated with suited timberlands also have Desired Conditions for late successional stages that would maintain lands for future old growth potential.

Patch sizes and shapes of the areas vary widely, from 25-foot linear buffers on either side of an ephemeral stream channel to very large blocks of WVNFS suitable habitat. Some of the larger blocks exceed 10,000 acres, and others exceed this threshold when combined with adjacent 5.0, 5.1 or 6.2 MP units.

Table B-1. Potential Old Growth Acres* on the Monongahela National Forest

Potential Old Growth Areas	Estimated Acres
Management Prescription Areas with Little or No Commercial Harvest Potential	
MP 5.0 – Designated Wilderness	78,700
MP 5.1 – Recommended Wilderness	27,700
MP 6.2 – Backcountry Recreation (SPNM Emphasis)	106,800
MP 8.1 – NRA Semi-Primitive Non-Motorized Areas	24,900
MP 8.2 – National Natural Landmarks	2,000
MP 8.3 – Scenic Areas that are not also NNLs	2,200
MP 8.4 – Ecological Areas that are not also NNLs	1,100
MP 8.5 – Candidate Research Natural Areas	2,200
Subtotal	**245,600**
Areas within Suitable Mgt. Prescriptions with Little or No Commercial Harvest Potential	
Indiana Bat Primary Range, Hibernacula, and Key Areas	146,100
West Virginia Northern Flying Squirrel Habitat	152,600
Perennial and Intermittent Stream Channel Buffers	
“Wild”or “Scenic” Wild and Scenic River Corridors	
Very High and Distinct Scenic Integrity Areas	
Other Areas Tentatively Unsuited Areas (Non-forested, unstable soils, etc.)	
Total Acres	**544,300**

*Acres are rounded to the nearest 100 and based on Alternative 2M for Forest Plan Revision

This acreage represents nearly 60 percent of the entire Forest. These numbers are believed to be conservative, based on the following factors:

- WVNFS suitable habitat and Indiana bat habitat areas may increase over time.
- There could be additional MP 8.0 designations in the future.
- Buffers for ephemeral stream channels and wetlands were not included in the estimates.
- Forests continue to age over time, which means that any area that the Forest Service does not actively manage for timber should continue to age as well, and the Forest Service rarely if ever manages every acre that is available to manage, even suitable timberland acres.

The Ecosystem Diversity (Coarse Filter) section of Chapter 3 of the EIS includes an extensive analysis of minimum dynamic area (MDA) reserves for all alternatives. The MDAs serve as potential old growth and are based on areas with MPs and other direction that will prohibit or greatly limit large-scale even-aged timber management. MDAs are defined for the Monongahela as at least 10,000 acres in size and total 390,000 for Alternative 2M, or over 40 percent of the Forest. The representation of ecological communities in these MDAs by alternative was used as an indicator of effects in the analysis.

IDENTIFICATION AND DISTRIBUTION OF OLD GROWTH AREAS

"*Rather than transferring western ideas to the east, scaled down in some subjective fashion, eastern concepts of old growth should reflect the size and longevity of eastern species and the successional pathways, disturbance regimes, and perhaps even the extent of past human disturbance*" (Tyrell et al. 1998).

In response to external and internal interest regarding old growth, the Forest Plan has been revised to incorporate a new approach for the identification and management of old growth. This section describes the overall approach, which has two essential parts:

1) Identify and preserve existing patches of old growth forest.
2) Identify and maintain areas of potential old growth that can add to the size and efficacy of existing old growth over time.

The MNF did not adopt the strategy, as some other Forests have, of designating or allocating lands across the Forest to a specific management prescription of old growth areas or preserves. This approach can provide a sense of security for some—especially those that have a devotion to old growth and an inherent mistrust of the agency—that old growth will be protected in perpetuity. In reality, there are very few old growth stands on the Forest now, and the Forest cannot guarantee that old growth stand conditions will develop on any given area in the future. Even in the absence of management-related disturbance, natural disturbances may occur in unpredictable patterns. Therefore, the MNF has developed the following management strategies to address the old growth issue:

1) The Forest has identified and preserved existing small patches of old growth within National Natural Landmark (8.2), Scenic Area (8.3), and Ecological Area (8.4) Management Prescriptions.

2) The Forest should continue to look for and preserve existing old-growth stands, as stated in Forest-wide objective VE03. This objective also describes the need to identify potential old growth.

3) The Forest has allocated Management Prescriptions with little or no emphasis for vegetation management (5.0, 5.1, 6.2, portions of 8.0 and 4.1). These MPs should serve as potential areas for future old growth. These areas are referred to as minimum dynamic area (MDA) reserves in the EIS.

4) Within MPs that emphasize vegetation management (3.0, 6.1, and portions of 4.1), the Forest Plan has management direction for specific areas that restrict vegetation management. These areas include listed species habitat, stream channel and wetland buffers, eligible WSR corridors with a Wild classification, and very high Scenic Integrity Objective areas. They would provide additional areas where potential old-growth conditions could develop over time.

5) Within MPs that emphasize vegetation management (3.0, 6.1, and portions of 4.1), there are desired conditions for late successional forests. Where these desired conditions are fairly low, such as 5-10

percent, they can likely be met with the areas described under part 4), above. Where desired conditions for late successional forests are more extensive, additional areas can be selected during watershed and project assessments. These forests would provide additional areas where potential old growth conditions could develop over time.

The *Ecological Considerations when Identifying Future or Potential Old Growth* section, below, provides components to consider when determining if an area is a good candidate for designation of future or potential old growth and are not meant to determine if old growth conditions are present. However, there may be other considerations for where late successional forests are managed for on the landscape (recreation, visual, wildlife habitat, etc.).

This approach should provide abundant areas where old-growth conditions could develop over time. Because these areas are well distributed across the landscape, it is expected that potential old growth would be well represented in the major forest types and Ecological Subsections on the Forest.

Ecological Considerations when Identifying Future or Potential Old Growth

The seven criteria listed under the Old Growth Definitions and Criteria section above can be used as a conceptual definition. When applying these criteria, site limitations should be kept in mind. For example, a dry site that is inherently infertile will not produce large trees at the same rate and dimensions as a moist, fertile site. The disturbance patterns and history of the site should also be considered. Because most of the lands that became the MNF were intensively logged at the turn of the 20th century and subsequently burned and grazed, the current forests date from this era and are mainly even-aged. The introduction of exotic pests and diseases has greatly impacted, and will continue to impact, forest composition. For example, American chestnut once dominated eastern West Virginia before the introduction of chestnut blight largely eliminated this species. More recently, hemlock wooly adelgid, beech bark disease, and gypsy moth are known to cause decline or mortality in the MNF and surrounding private forests.

The role of fire in oak-dominated forests should also be considered when maintaining old-growth patches. Oaks are fire adapted and in some areas are being replaced by more shade tolerant trees through fire suppression. However, their current dominance in some stands may reflect the altered disturbance regimes caused by the large-scale clearcuts, fires, grazing, and the elimination of American chestnut in the 1920s and 1930s.

At the project level, knowing the forest types and landtype associations (LTAs) of the project area can help determine the physical environment and disturbance regimes that helped create the current forest, as well as the forces likely to affect the forest in the future. Descriptions of the LTAs can be found in the *MNF Ecological Classification User's Guide* (USDA Forest Service 2002), including the distinguishing features, disturbance regimes, and management implications for each LTA on the MNF.

Historic disturbance regimes focus mainly on the occurrence of fire in an LTA. Other natural disturbances, such as wind, ice, or snow damage, drought, pests and pathogens, occur at various spatial scales. These disturbance agents have not yet been identified at the LTA scale. However, site factors such as climate, soil types, and elevation can give clues to the natural disturbance factors likely for the site or LTA. These disturbance factors and the likely scale they historically operated within should be considered when identifying existing or potential old growth.

The likely successional path of a current stand can also help in determining its suitability as potential old growth. Current vegetation may not represent the potential natural vegetation of the site. Care should be taken to ensure that conditions that historically drove old-growth dynamics are maintained at the proper

spatial scales (especially fire in fire-dependent communities), otherwise old-growth preservation may lead to degraded systems.

At the site level, potential natural vegetation predictions in the Forest's Terrestrial Ecological Units database can be used as an estimate of the future dominant tree species. The potential natural vegetation should be reviewed, on the ground if possible, and considered when determining the suitability of an area for meeting old-growth objectives.

Another tool is the MNF Fire Adapted Vegetation model and predicted fire regime condition class (FRCC) map. This model, based on potential natural vegetation and existing vegetation, summarizes at the landscape scale the fire adaptability of the forest communities across the Forest. This tool is useful in determining if areas with late successional forest are fire adapted or dependent, what fire regime and condition class they are in, and whether prescribed fire may be a tool to maintain or create the desired forest structure. One example of this would be in areas dominated by some oak species. Depending on the LTA, fire may be necessary to retain oak dominance and to avoid slow conversion to maple dominance.

REFERENCES

DeMeo, T., J. Concannon, and H. Pawelczyk. 1995. Clarification of forest plan intent for designated old growth areas on the Monongahela national forest. Unpublished report.

Hansson, L. 1992. Landscape ecology of boreal forests. Tree 7(9):299-302.

Ranney, J.W., M.C. Bruner, and J.B. Levenson. 1981. The importance of edge in the structure and dynamics of forest islands. In: Bergus, R.L. and D.M. Sharpe, eds., Forest Island Dynamics in Man-Dominated Landscapes. New York: Springer-Verlag, pp. 67-95

Runkle, J.R. 1982. Patterns of disturbance in some old-growth mesic forests of North America. Ecology 63: 1533-1556.

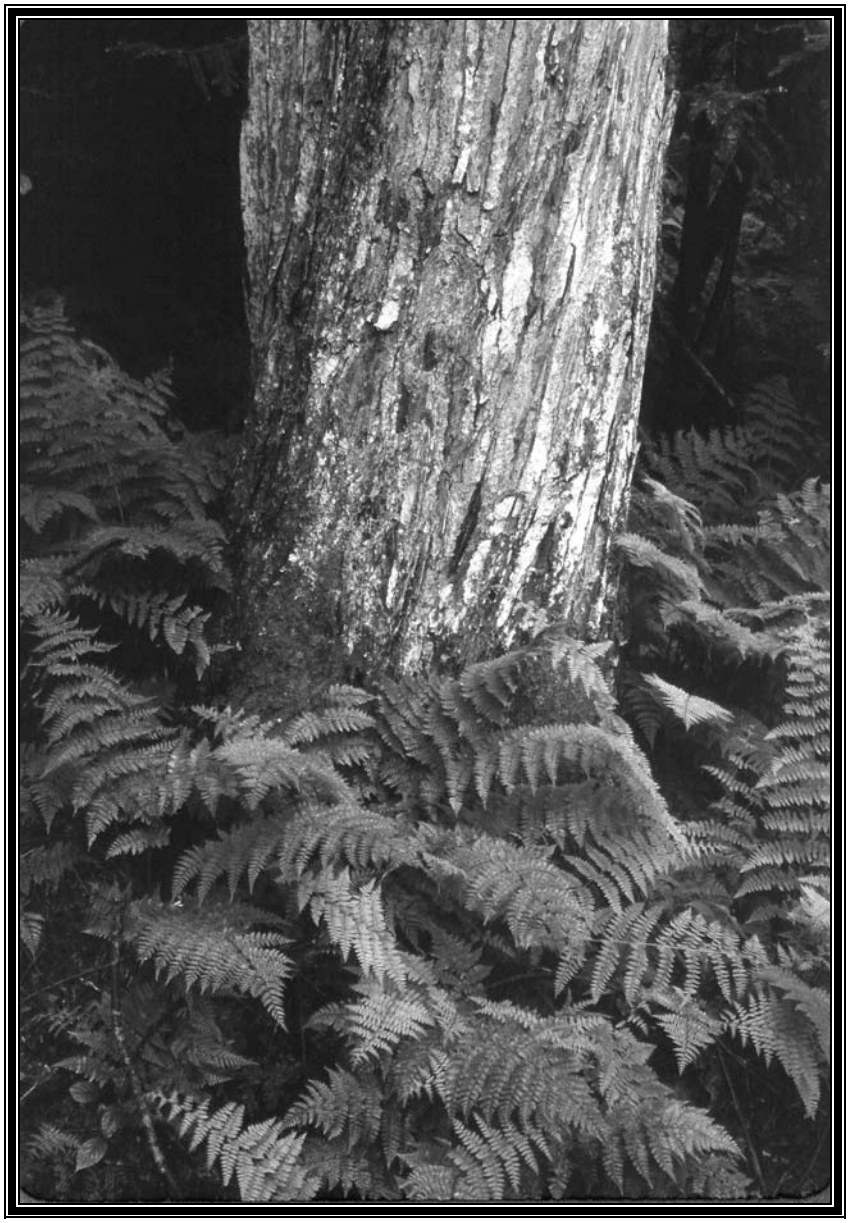
Smith, T.L. 1989. An overview of old-growth forests in Pennsylvania. Nat. Areas Journal 9(1):40-44.

Temple, S.A. 1984. Predicting impacts of habitat fragmentation on forest birds: a comparison of two models. In: Verner, J, M.L. Morrison, and C.J. Ralph, eds., Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates.

Tyrrell, L.E., G.J. Nowacki, T.R. Crow, D.S. Buckley, E.A. Nauertz, J.N. Niese, J.L. Rollinger, and J.C. Zasada. 1998. Information about old growth for selected forest type groups in the eastern United States. USDA Forest Service, North Central Forest Experiment Station, General Technical Report NC-197.

USDA Forest Service, Monongahela National Forest. 2002. Monongahela national forest ecological classification user's guide, 09/30/02 draft. Unpublished report.

USDA Forest Service, Southern Region. 1997. Guidance for conserving and restoring old-growth forest communities on national forests in the southern region: Report of the region 8 old-growth team. USDA Forest Service, Southern Region, Forestry Report R8-FR 62.



Gaudineer Scenic Area

Appendix C

Analysis Of The Management Situation

Summary

Table of Contents

Page No.

Introduction C-1

Recreation and Wilderness C-1

Vegetation Diversity and Management C-3
- Old Growth C-4
- Prescribed Fire C-6
- Forest Health C-8

Timber Management and Supply C-10
- Silvicultural Methods, Rotation Ages, and Forest Types C-11
- Timber Production C-16

Soil, Water, and Air C-21

Benchmarks C-24

References C-26

INTRODUCTION

The regulations to implement the National Forest Management Act (NFMA) require, as a part of the planning process, an analysis of the management situation (AMS). The primary purpose of the AMS is to identify any need for change from the direction in the original or 1986 Forest Plan. The AMS also determines the ability of the planning area to supply goods and services in the response to society's demands. Detailed AMS reports were prepared for the following topics:

- Recreation, Trails, Landscape Management and Wilderness Resources
- Heritage Resources
- Terrestrial Ecology and Special Forest Products
- Terrestrial Species Viability Evaluations
- Vegetation Management
- Timber Suitability Assessment
- Terrestrial Wildlife Species and Habitat
- Mineral Resources
- Soil, Water, and Air Resources
- Research Needs

The complete AMS is included in the official planning record. This appendix provides a summary that highlights the portions of the AMS that relate to the need for change. The need for change topics are:

- Backcountry recreation opportunities, including recommended wilderness
- Vegetation diversity and restoration opportunities
- Suitable timberlands and available timber supply
- Soil and water concerns.

This summary of the AMS highlights the following similar topics:

- Recreation and Wilderness
- Vegetation Diversity and Management
- Timber Management and Supply
- Soil, Water, and Air Resources

The intent of the summary is to give an overview of each resource summarized, anticipated demand for the resource, and a discussion of the change needed.

RECREATION AND WILDERNESS

The West Virginia Department of Tourism Annual 2001 Report indicates that 22 million visitors traveled to the state and spent over $3.1 billion dollars, with a total economic impact of $4.86 billion. Included are 8.6 million visitors who stayed overnight with an average stay of 3.72 days/person. Leisure expenditures were $69.50/person/day. The 2001 Report indicates:

- The most popular outdoor recreation activities that visitors participated in include: Site-seeing (20%), Visiting Parks (17.8%), Hiking/Mountain Biking (15.5%), Visiting Historic Sites (10.1%), Hunting/Fishing (8.6%), and Camping (6.8%).

- Visitors to West Virginia are primarily from the following states: Ohio (16.4%), Virginia (9.3%), Pennsylvania (8.1%) Maryland (7.5%), Kentucky (5.4%), North Carolina (4.9%) and Florida (4.65).

The top five overnight metropolitan markets are: Washington D.C., Cleveland, Pittsburgh, Charlotte, and Columbus.

- The Monongahela National Forest is within a day's drive of 1/3 of the United States population.
- The 2001 visitor survey indicates that one of the primary attractions of West Virginia is Outdoor Recreation activities, while areas of concern identified by visitors are the quality of restaurants and accommodations.
- The Monongahela National Forest provides over 50% of the available public land available for outdoor recreation in the State of West Virginia.
- In 2001, over 1 million hunting and fishing licenses provided over $15.5 million in revenues to the State, including 71,201 conservation stamps to non-residents.
- There are 9 state forests and 41 state parks totaling over 200,000 acres in West Virginia. In general, state managed parks have significant development and provide more developed recreation and leisure activities than most Monongahela National Forest facilities.

The following recreation activity participation statistics are results of the National Visitor Use Monitoring Program. The numbers are averages based on surveys completed on the Monongahela National Forest (Forest). Only the top 10 activities have been listed.

Table C-1. Visitor Use Monitoring Program Summary

Activity (participation on FS lands)	% Participation
1. Viewing Natural Features (scenery, flowers, etc)	59.42%
2. Viewing Wildlife, Birds	54.68%
3. Hiking/ Walking	46.64%
4. General/Other (relaxing, hanging out, escaping noise and heat)	45.79%
5. Driving for Pleasure	34.83%
6. Fishing	26.36%
7. Nature Center Activities	19.74%
8. Camping, Developed Sites	14.97%
9. Picnicking	14.95%
10. Downhill Skiing	11.18%

Note: Bicycling (mountain biking) is 5.71% and horseback riding is 0.25%.

As the remainder of the country becomes increasingly populated, it is reasonable to assume that the relatively uncrowded State of West Virginia will become more attractive for both recreationists and others seeking areas to get away from the crowds.

In West Virginia, the Forest, and to a lesser extent the State lands, are almost the exclusive providers of public primitive or semi-primitive non-motorized recreation opportunities. The Forest contains five Wildernesses totaling over 78,000 acres, or about 9% of the Forest. There are also over 324,400 acres of the Forest in Management Prescription 6.1 and approximately 125,000 acres in Management Prescription 6.2. Both of these prescriptions emphasize semi-primitive non-motorized (SPNM) recreation opportunities and represent almost 50% of the Forest land base. The National Visitor Use Monitoring was completed on the Monongahela National Forest from October 1, 2002 to September 30, 2003. The

results indicate that there were an estimated 38,590 visits to the 5 wildernesses on the Forest, which is about 3% of the total recreation use.

Need for Change

Revising the plan creates an opportunity to ensure our goals, objectives, standards, guidelines, and policies are appropriate to enhance our visitor's recreation opportunities and experiences. Opportunities exist to discuss, explore and define the role of the Monongahela National Forest as a recreation provider in terms of Forest settings. Using the Recreation Opportunity Spectrum (ROS) we have the opportunity to display a range of areas in a variety of existing and desired conditions across this spectrum. Because the Forest provides over 50% of the public lands outdoor recreation opportunities in the state of West Virginia, the amount of areas providing rural, roaded-natural, and semi-primitive non-motorized opportunities are extremely important to over 1 million visitors annually.

Revising the plan will also allow us to conduct a roadless area inventory and wilderness evaluation. This analysis will help identify what the appropriate amounts of semi-primitive non-motorized and wilderness study areas are for the Forest. The evaluation of wilderness potential and wilderness recommendation is one of the 6 planning decisions to be made in Forest Plan revision.

Changes Under the Revised Forest Plan

Forest Plan direction was reviewed and updated. The desired conditions and goals for recreation management were greatly expanded, and standards and guidelines were revised to provide protection of recreation resources and settings, while allowing more flexibility for management at the site level.

The Forest conducted a roadless area inventory and wilderness evaluation. Four areas (27,700 acres) were recommended for wilderness study. Two of these areas would expand existing wilderness.

The overall backcountry recreation settings and opportunities offered by Management Prescriptions 5.0, 5.1, 6.2 and 8.1 SPNM (Semi-Primitive Non-Motorized areas in the Spruce Knob-Seneca Rocks NRA) show a substantial increase (34,900 acres) over those in the 1986 Plan.

The Spruce Knob-Seneca Rocks NRA was given its own Management Prescription, 8.1, to emphasize the importance of this national recreation attraction. This prescription has its own set of expanded management direction. A revised management plan for the NRA is in the works that will tier to the NRA prescription and management direction.

VEGETATION DIVERSITY AND MANAGEMENT

Within the proclamation and purchase unit boundaries of the Monongahela National Forest are approximately 1.7 million acres. Of these, about 919,000 acres are in federal ownership, and about 881,000 acres are forested. The Forest is situated at the intersection of the southern reaches of some tree and plant species, and the northern extent of others. The Forest is mountainous, with a range in elevation from about 900 feet to a maximum of 4,863 feet, further contributing to the wide diversity in vegetation on the Forest. The general axis of the Forest is northeast to southwest.

This summary of Terrestrial Ecology and Special Forest Products AMS will cover: old growth, prescribed fire, and forest health (which includes insect and disease pathogens), altered disturbance regimes, ecological sustainability, and non-native invasive species.

Old Growth

Few areas of the Forest National Forest escaped the turn of the 20th century logging and are considered true old growth. These areas are protected by designation as candidate Research Natural Areas, Botanical Areas, or Scenic Areas and through specific Forest Plan standards and guidelines. These areas total around 300 acres and include the Gaudineer Scenic area (140 acres), Shavers Mountain Spruce-Hemlock Stand (68 acres), Virgin White Pine area (13 acres), and the Fanny Bennett Hemlock Grove (70 acres).

The 1986 Forest Plan calls for designating old growth in Management Prescriptions (MP) 3.0, 4.0, and 6.1. Old growth stands in these MPs were identified and designated during project development and analysis until the mid 1990s. Currently about 10,763 acres are given a land suitability code in the CDS database that identifies them as designated old growth. These designations are misleading because the areas are not likely true old growth and are more accurately described as future or potential old growth or mature habitat.

Currently, during project design and analysis, a pool of potential old growth stands is identified. Instead of designating stands as old growth and risk choosing less than optimal future habitat, the pool of potential old growth is treated as a resource, and impacts to this resource from proposed actions are assessed and documented. The pool of acres is often greater than the 5% called for in Forest Plan guidelines for MPs 3.0, 4.0, and 6.1, which are the only management prescriptions calling for designation of old growth.

The purpose of designating old-growth stands in MPs 3.0, 4.0, and 6.1 is different than the designation of large areas of forest where vegetation management is limited (5.0 and 6.2 MPs). MPs 5.0 and 6.2 areas serve as large areas of future old growth conditions. The small patches called for in the Forest Plan in other MPs were not meant to provide fully developed old growth habitat conditions, but rather to increase vegetative and structural diversity in areas where timber management is allowed.

About 98% of the Forest has been inventoried for age and forest type, including non-forested areas, as stored in the 2003 CDS database (although no age is associated with non-forested areas). The majority of the Forest is over 60 years old (84%), with 75% of the Forest between the ages of 60 and 104 years. About 9% of the forest is over 105 years old. The age of a stand can be considered an average as it is usually estimated from one or two trees representative of the majority of the stand. Many stands include multiple age classes depending on previous harvest or natural disturbances. Individual trees in a stand either older or younger than the given stand age are likely. These figures are for all management prescriptions and forest types.

Two internal reports were prepared to address and guide the management of old growth on the Forest since the adoption of the 1986 Forest Plan. The first in 1990, titled “Selection, Designation and Management of Old Growth”, provided direction, perspective, and a process for interdisciplinary teams to follow in selecting, designating, and managing areas to meet Forest Plan direction relating to old growth.

In the 1990 report a new term was used to describe the stands designated to meet Forest Plan old growth standards and guidelines under MP 3.0, 4.0, and 6.1. These areas are better described as “future old growth” and defined as areas of forest too young to be true old growth presently but set aside (designated) so that through time, proper management, and protection they will provide true old growth on the Forest. These stands do not necessarily exhibit old growth characteristics when designated as future old growth.

Before 1990, interdisciplinary teams identified a pool of the oldest stands within an analysis area but did not take the next step of designating 5% of the area as old growth. The 1990 report outlined steps for

interdisciplinary teams to take to identify a pool of possible old growth for designation. The report suggests that waterhole development, foot trail construction, stream improvement, and wildfire suppression should not be allowed in designated old-growth stands. All other activities should not normally be appropriate or permitted, including firewood collection, commercial thinning, regeneration harvest, salvage sales, timber stand improvement, wildlife openings, savannahs, prescribed fire, grazing, mineral activity, temporary road construction, log landings, permanent road construction, and right-of-way construction.

In 1995, the Forest reviewed the Forest Plan intent for designation and management of old growth areas in another internal report. In this report, titled "Clarification of Forest Plan Intent for Designated Old Growth Areas on the Forest", the Forest Plan intent for old growth designation was described as providing small, dispersed elements of old growth vegetation and structural diversity throughout the Forest in order to help maintain a wide variety of species. The intent was not to provide large tracts of contiguous forest habitat for forest interior-dependant species.

This report provided a set of guidelines to use in determining areas to designate as old growth, in accord with the generic guidelines developed at the national scale. The guidelines or criteria are: age, species composition, structural diversity, woody debris, gap formation, patch size, and adjacency.

Need for Change

Forest wildlife biologists have recognized that with the long rotation ages and small percentage of forest regenerated or thinned during each entry, conservation of old growth habitat when the stands have not yet developed mature forest characteristics may lead to less than optimal habitat. This change in application of the 1986 Forest Plan needs to be considered during revision.

The 1986 Forest-wide direction allowing for old growth patches to be harvested and replaced by other stands needs to be reconsidered during Plan revision.

Identification and conservation of potential old growth is desired by the Forest as part of the overall vegetation management strategy for age class and ecological diversity. One way to conserve potential old growth in MP 3.0, 4.0, and 6.1 areas is to assign individual areas, one at a time, to a separate management prescription. However, since these areas are likely to be small and subject to change, they may or may not provide a desired amount or distribution of areas over time. The conservation strategy should be expanded to identify and conserve a range of patch size and distribution of old growth across the Forest. It is the intent of the Forest to have a distribution of late successional stage forests that is representative of major forest types and ecological subsections, and comprised of large, medium, and small patches. The designation of old-growth stands called for in MPs 3.0, 4.0, 6.1, and 6.3 in the 1986 Forest Plan as amended needs to be revised to reflect desired conditions for potential old-growth conservation.

Changes under the Revised Forest Plan

Existing small patches of old growth are still protected in special area (8.0) designations. A strategy for identifying and conserving potential old growth has been developed for the Revised Plan. This strategy is more fully described in Appendix B to the Revised Plan, and is briefly summarized here.

Rather than try to protect or create old growth conditions through piecemeal, one-area-at-a-time designation, the Forest identified a broad-scale strategy during revision based on management prescription (MP) allocation and management direction constraints. The key assumption in this strategy is that where intensive vegetation management is prohibited or substantially constrained, ecological

processes will dominate vegetation change on the landscape, and forest stands will continue to age and develop old-growth characteristics over time.

Large patch sizes (>10,000 acres) should develop in large MP areas—such as 5.0, 5.1, 6.2, and portions of 8.1—where commercial timber harvest is not featured. These prescription areas are fairly well distributed in various forest types and ecological subsections across the Forest.

Medium and small patches should develop in other MPs—including MPs that emphasize timber management—through management direction that constrains timber harvest in specific areas. These areas include channel and wetland buffers, suitable habitat for WV northern flying squirrel, Indiana bat key areas and hibernacula, Wild segments of eligible Wild and Scenic Rivers, and areas with a Very High Scenic Integrity Objective. Again, these areas are well distributed throughout the Forest. Where medium and small patches occur next to or connect large MP patches, they should increase the size and habitat effectiveness of each.

The Revised Plan has also incorporated desired conditions for late successional stages into MPs that emphasize vegetation management for age class diversity. The late successional stages should provide for structural and habitat diversity, and are the areas where old-growth characteristics would most likely develop over time.

Prescribed Fire

The Forest is required to maintain an approved Fire Management Plan. In this document, fire management goals are given by MP. In all MPs, the suppression strategy is to control all fires. Because the Forest is relatively isolated from firefighting resources other than local crews and volunteer fire departments, the cost of suppression would increase exponentially once the capability of local resources is exceeded. The most cost-effective strategy is to safely control wildfires at the smallest possible size with local resources. The Forest used this same justification in 1997 to choose to not permit the management of unplanned ignitions.

The use of prescribed fire by MP is given in Forest Plan standards and guidelines. Dolly Sods and Dolly Sods North are unique in management due to the presence of unexploded ordnance. The management of fire in these areas is addressed in the MNF Fire Management Plan as a separate Fire Management Unit.

The 1986 Forest Plan does not recognize the role fire played in development of vegetation. An estimated 32% of the Forest is naturally suited to use of prescribed fire as a management tool based on landtype associations and existing forest types. The role of fire in the development of eastern forests before European settlement is still being discovered and is not well known for West Virginia and the Monongahela National Forest. The ecological role of fire in regeneration of oaks is better documented now, and silvicultural systems including prescribed fire have been developed.

In 1997, fires on the Monongahela from 1981 to 1995 were analyzed to predict size and intensity of future fires. The Forest has less than 10 fires a year. About seven occur at fire intensity level 1 (the lowest intensity level). For fires in this time period, 95% included a reported cause. Arson was the most reported cause at about 45%; hunters caused about 26% of the fires reported between 1980 and 1995, campfires caused 13%, smoking caused 9%, and lightning caused 7%. Distribution numbers have been similar since then.

Because of the low occurrence of natural fires, significant amounts of rain, and rapid decomposition, the issue of hazardous fuels on the Forest is secondary to the desire to reintroduce fire to ecosystems adapted to this natural disturbance. As gypsy moth damage and beech bark disease continue to cause morality,

hazardous fuels on the Forest may become a greater concern. The most common fire on the Forest is a surface fire that only partially consumes the duff layer; however, ladder fuels like pines, mountain laurel, and rhododendron can create localized areas of shrub crown fires, especially on steep slopes. Occasionally, conditions such as high winds or slash piles create conditions where a surface fire with mixed severity (some mortality of overstory trees) can occur.

The Forest continues to suppress and control all fires, regardless of ignition. To allow management of naturally ignited fires to accomplish specific vegetative goals and objectives, the Forest plan would need to be updated. An analysis would need to be made of the current fire fighting resources' ability to safely handle this use of fire. The Forest did not use prescribed fire as a management tool until 1998, but have averaged 139 acres/year since. The following table shows acres of prescribed fire by year since 1998.

Table C- 2. Acres of Prescribed Fire on MNF – 1998 to 2005

Year	Acres	Year	Acres
1998	85	2002	84
1999	220	2003	221
2000	95	2004	77
2001	152	2005	177

Need for Change

While desirable in some parts of the Forest, using wildland fires to accomplish natural resource management goals is not likely to be effective because the Forest has a low occurrence of lightning strikes in dry season. Also, the Forest currently lacks qualified people to manage a wildfire to meet resource goals. Finally, the intermingled land ownership within the Forest proclamation boundary necessitates an aggressive fire suppression strategy. For these reasons, revised Forest Plan direction should reflect the low potential for wildland fire use.

To retain management options, the Forest Plan should be changed to allow prescribed fire in MP 6.2 areas. Not all MP 6.2 areas are suited to prescribed fire, however in some areas wildlife habitat goals and desired ecological conditions may be met through prescribed fire.

The fire regimes and condition classes (FRCC) of the Forest needs to be determined. As part of this determination the Forest should identify ecosystems where fire does not need to be re-introduced, where prescribed fire would not meet management goals, and where use of prescribed fire is essential or potentially effective. Current management direction requires the Forest to determine FRCC before proposing prescribed fire, regardless of resource objective. FRCC is more easily determined in western forests; however the Eastern Region is working to establish methodologies for determining FRCC in eastern forests. Currently the Forest uses a coarse-scale model developed for the contiguous United States and is creating a local model.

Changes under the Revised Forest Plan

Revised Forest Plan direction expands the role of prescribed fire to be used for ecosystem restoration and fuels reduction. Prescribed fire is allowed in MP 6.2, and all other MPs except for Wilderness. In addition, MP 6.1 has been revised to emphasize the increased use of fire as an ecological tool for restoring oak ecosystems. Through consultation with USFWS, the Forest's annual limit on prescribed fire has been raised from 300 to 3,000 acres.

Aggressive fire suppression is emphasized throughout the Forest, and wildland fire use is not presented as a desirable option for the reasons discussed above.

Fire regimes and Fire Condition Classes have been determined for the Forest and integrated into fire planning at the Forest-wide scale.

Forest Health

Because forest health issues differ by temporal and spatial scales, any definition of forest health is likely to be conceptual in nature. The use of the term "health" is controversial because although health is easy to comprehend in terms of the human body, it may not be appropriate for ecosystems such as a forest. However, some researchers and managers have determined characteristics of what are considered healthy forests. Kolb et al. (1995) propose the following characteristics as a definition of forest health: 1) physical and biotic resources to support forest cover; 2) resistance to dramatic change; 3) functional equilibrium between supply and demand of essential resources; and 4) diversity of seral stages and stand structures.

The AMS focuses on those elements of dramatic change acting on the Forest. The insects and diseases known to be affecting the forest at greater than historic levels are not native to the eastern United States. Endemic insects and diseases will not be discussed in this analysis.

Insect and Disease Pathogens - Beech bark disease, a disease complex formed by the combined action of a non-native scale insect and native fungi, was first described from the Forest in 1981 (Mielke et al. 1982). Beech bark disease is found across the Forest. Mortality and decline of beech trees is occurring. As beech trees die, they often sprout from stumps and roots, creating a beech thicket of sprouts in the understory. Large woody debris is being added to the forest floor and to stream channels from beech mortality. It is not yet known how composition changes in forest canopy, midstory, and understory would affect the long-term health of forested stands with beech bark disease.

Eastern hemlocks across the Forest are affected by the hemlock wooly adelgid, particularly in riparian areas. Decline of trees, mainly evident through thinning of the canopy, is noted across the Forest. This non-native insect has the potential to affect riparian ecosystems across the Forest through loss of shade and disruption of nutrient cycles. Small-scale bio-control of the adelgid is planned for 2004.

The gypsy moth caterpillar prefers to feed and lay eggs on species of oak. The populations of gypsy moth across the Forest are monitored, and spraying to control population levels has occurred. Gypsy moth has the potential to affect forest structure and composition through decline and mortality of overstory oaks trees. The risk of more frequent and more intense fires may also increase if tree mortality increases on drier parts of the Forest, and surrounding private forests are also affected.

All insects and diseases predispose trees to other stressors such as drought, freeze injury, acid precipitation, decay fungi, and other insects. Monitoring and controlling where possible these exotic stressors is needed to continue to have a healthy forest. The Forest also continues to cooperate with others in monitoring for new exotic pathogens and increases of native insects and diseases.

Altered Disturbance Regimes - As discussed under the "Old Growth" and "Prescribed Fire" sections, there are areas of the Forest with vegetation adapted to low-intensity surface fires. Also, after the near total clearing of the forest at the turn of the 20th century, some areas burned that normally would not experience this disturbance, or the intensity of fires was greater than would naturally have occurred. Another result of the extensive clearcutting that occurred is that the forests changed from a largely uneven-aged structure to one that is essentially even-aged.

Ecological Suitability to Management - The ecological suitability of certain areas and the management prescriptions assigned to them is a concern documented in the 2001 Timber Monitoring Report. For example, one goal of lands under MP 6.1 is to focus on manipulation of the naturally occurring tree species composition to optimize hard mast production, age class distribution, and ensure a continuous mast supply. Also in the description of the purposes, note is made of the lands in transition from a predominately hardwood overstory to a mixed oak-pine or northern hardwood-red spruce type. These areas are singled out for a management strategy to maintain the mast production in these areas. This issue has been dealt with through site-specific implementation so that mast production on a site is ensured through regeneration of existing oaks and hickories, sometimes through intensive measures.

Some areas of the Forest with a diversity of hard mast species (red oak, white oak, hickory, black cherry) are the result of near catastrophic disturbances at the turn of the century. Most of West Virginia was cleared of trees by the 1920s, and then areas were burned and often grazed before returning to forest cover. Also, the death of American chestnut trees helped oaks to gain dominance in some areas. Some areas of the Forest are more suited to northern hardwoods (for example, sugar maple, beech, birch, and yellow birch). To regenerate oaks on some areas has increased costs of management due to the need for planting and protection of oak seedlings. Also, during project-level analyses, some publics have opposed management practices such as herbicide, prescribed fire, and clearcutting necessary to maintain mast species in areas not ecologically suited to continued regeneration of oak species. The Forest has developed land delineations based on ecological land types to aid in the determination of where managers should and should not concentrate efforts to regenerate certain tree species.

Non-native Invasive Species - Non-native invasive species (NNIS) are known to occur on the Forest. Control efforts have focused on pastures on the Forest.

A list of known and expected non-native plant species and their risk ranking has been drafted for the Forest to use during botanical surveys. This list includes 91 species. Eighteen species are considered a severe threat and are known to invade natural habitats and replace native species. Thirty one non-native plants are less invasive than those just mentioned and have less impact on native plant communities, but are generally found in disturbed areas, are capable of spreading into adjacent undisturbed areas, and pose a significant threat. Twenty seven species pose a lesser threat, and are non-native plants normally established and spread in areas of ground disturbance with full sunlight or partial shade. An additional fifteen non-native plants are problematic elsewhere in parts of West Virginia, but their status is unknown within the Forest proclamation boundary.

Invasive species generally have high reproductive rates, are pioneering species, are long lived, reproduce vegetatively and rapidly, have high genetic variability, tolerate a wide range of conditions, and are abundant in their natural range.

Need for Change

Bringing fire back into some ecosystems would help re-establish the ecological role of this disturbance. Allowing for prescribed fire in MP 6.2 areas is a change needed in the Forest Plan. This topic is covered in the Prescribed Fire section above.

The purpose statements for management emphasis under MP 6.1 need to be reworded if MP 6.1 is retained in the revised Forest Plan. The statements under the secondary purposes for these areas dealing with a management strategy for sites reverting from hardwood to conifer and the intermingled high site hardwood types needs clarification. In some areas, conversion to red spruce is desirable. The statement

that hard mast be optimized on all areas under MP 6.1 may not be feasible in those areas where oak species are being replaced by northern hardwoods or the costs to slow succession are high.

Monitoring of even-aged regeneration harvest units has shown that oaks sometimes do not compete well on sites with higher site indices without tubes to protect seedlings, or herbicides to reduce competition. The Forest Plan needs to be flexible enough to include consideration of the ecological setting when determining tree species to emphasize. During Plan revision, the interdisciplinary team needs to consider whether it makes sense from an ecological and economic perspective to implement intensive management techniques in order to perpetuate certain mast species in some areas. Also, the team should consider the impacts of succession on those areas of the Forest where vegetation management is not occurring. If not addressed specifically in Forest Plan revision, then the costs and benefits of retaining hard mast in some areas need to be addressed at the project level.

The Forest should develop ways to address non-native invasive species (NNIS) and other undesirable species. The Forest needs to detect invasive plants, control known species, avoid establishing non-native invasive species, and use native material for our revegetation projects. The list of non-native invasive plants likely found on the Forest should not be incorporated into the revised Forest Plan, as it is a work in progress. The revised Forest Plan should include a strategy for prioritizing treatment and monitoring. The Forest Plan should remain flexible for NNIS management. Some species on the list such as common chickweed and coltsfoot are older imports from colonial days. Having this fairly long list of species does not mean that all species will be controlled on all sites. A risk analysis is needed to determine which species to control and where, so that maximum benefits are gained from control efforts.

The 1986 Forest Plan lists recommended grasses and legumes for revegetating disturbed areas. Since 1986, some of the species listed in this table are considered noxious, invasive plants and a potential threat to natural plant communities that should be avoided. This list needs to be updated to remove these species and include species that are acceptable.

Changes under the Revised Forest Plan

The MP 6.1 purpose statements have been revised to reflect desired changes in conifer (primarily red spruce) and oak ecosystem management. In particular, management intent has shifted somewhat to restoring oak ecosystems where ecologically appropriate, which should provide for sustainable wildlife habitat and mast production over time. MP 6.1 also now features more emphasis on using prescribed fire as an ecological tool to help restore oak ecosystems where appropriate. All tools are available to help achieve oak regeneration and ecosystem restoration.

The Revised Forest Plan includes new Forest-wide NNIS management direction in the Vegetation section, as well as revised direction for the use of native plants for revegetation and other purposes. The non-native invasive species list is dynamic and will therefore be updated outside of the Revised Plan to allow for maximum flexibility in addressing periodic changes.

TIMBER MANAGEMENT AND SUPPLY

This summary will cover: silvicutural methods, rotation ages, forest types, and timber production with a discussion of allowable sale quantity (ASQ).

Silvicultural Methods, Rotation Ages, and Forest Types

The 1986 Forest Plan predicted that during the first decade of implementation, the Forest would use both even-aged and uneven-aged regeneration harvest on an estimated 2,000 acres a year and thin an estimated 4,000 acres a year. As reported in the *Revised Biological Assessment* (USDA 2001), from 1987 to 1998 the annual average was an estimated 4,000 acres, both regeneration and thinning, managed by commercial timber harvest. This has been declining annually; from 1995 to 1998 the annual average was 2,031 acres managed by commercial timber harvest per year; from 1999 to 2003 the average annual harvest fell to about 1,469 acres (less than 0.2% of the total MNF acres). Table C-3 displays the amount of harvest per year for each silvicultural method, from 1986 through 2003.

Table C-3. Acres of Timber Harvest by Harvest Method, 1986-2003

Fiscal Year	Regeneration Harvest				Thinning	Uneven-Aged Harvest		Salvage
	Clearcut	2-Aged	Shelterwood Seed Tree	Totals		Single Tree	Group Selection	
1986	846	0	48	894	3,405	124	0	50
1987	1,347	0	122	1,469	3,958	234	39	5
1988	1,827	0	98	1,925	4,333	433	0	107
1989	1,574	0	19	1,593	2,459	239	0	0
1990	924	0	0	924	3,324	356	0	68
1991	1,404	21	53	1,478	2,241	848	31	892
1992	1,110	64	47	1,121	2,460	944	0	55
1993	1,253	60	90	1,403	1,655	27	0	31
1994	789	44	46	879	1,417	0	0	85
1995	646	272	53	971	1,093	0	164	538
1996	533	333	94	960	1,899	238	403	0
1997	356	341	58	755	1,529	313	97	0
1998	460	213	200	873	1,495	141	33	88
1999	433	488	104	1,025	1,410	214	137	11
2000	435	249	82	766	659	0	0	0
2001	56	385	21	462	534	79	0	0
2002	45	176	113	335	502	0	0	0
2003	90	156	184	430	776	0	14	0
Totals	**14,129**	**2,802**	**1,432**	**18,363**	**35,149**	**4,191**	**913**	**1,930**

The amount of area regenerated through clearcut with reserve tree harvesting has trended downward since 1991, with a peak of 1,827 acres in 1988. In the 18 years since the Plan was signed, about 68% of the acres regenerated through clearcut with reserve tree harvesting were under MP 6.1 and only about 29% of the acres under MP 3.0.

Before 1992, two-aged harvest method was not used on the Forest, even though the Forest Plan does allow for this harvest, then called deferred rotation. Since 1992, the Forest has treated an estimated 2,802 acres in two-aged harvest. The majority of acres (about 70%) regenerated through two-aged harvesting comes form lands managed under MP 6.1.

Table C-4 displays the acres that were harvested by Management Prescription (MP).

Table C-4. Acres and Percent of Timber Harvest by Management Prescription and Harvest Method

Even-Aged Management	MP 2.0		MP 3.0		MP 6.1		MP 8.0	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Clearcut Reserve Tree	128	1%	4,170	29%	9,558	68%	273	2%
Two-Aged	21	1%	801	29%	1,980	70%	0	0
Shelterwood/Seed Tree	0	0	534	37%	898	63%	0	0
Totals	149	1%	5,505	30%	12,436	68%	273	1%
Uneven-Aged Management	MP 2.0		MP 3.0		MP 6.1		MP 8.0	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Single Tree Selection	780	19%	2,238	53%	263	6%	910	22%
Group Selection	724	79%	60	7%	98	11%	31	3%
Totals	1,504	29%	2298	45%	361	7%	941	18%
Thinning	MP 2.0		MP 3.0		MP 6.1		MP 8.0	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
	936	3%	11,919	34%	22,278	63%	0	0
Salvage	MP 2.0		MP 3.0		MP 6.1		MP 8.0	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
	0	0	287	16%	1,555	84%	0	0

An estimated 18,363 acres have been regenerated through shelterwood or seed tree harvesting since 1986. The use of these regeneration harvests, mainly shelterwood, has generally increased over time as clearcutting has deceased. Under these even-aged regeneration harvest methods, the greatest residual basal areas are found, making these a good choice in areas where retention of vertical structure in the forest is important, while allowing for regeneration of shade intolerant or moderately tolerant tree species. Again, the majority of acres (63%) come from lands under MP 6.1.

The 18,363 acres that were regenerated on the Forest since 1986 are the acres harvested using clearcut, two-aged, shelterwood, and seed tree harvests. When all even-aged regeneration harvests are broken out by management prescription, MP 6.1 areas contributed about 68% of the acres regenerated.

Thinning is used on the Forest to improve the health and increase growth of the residual stand by reducing the density of trees in the stand. Thinning is part of an even-aged silvicultural system, and is often called an intermediate harvest as it occurs between regeneration harvests. Since 1986 it is estimated that 35,149 acres have been treated using the thinning silvicultural method. Lands under MP 6.1 have contributed about 63% of the area thinned in the last 18 years compared to about 34% from MP 3.0 lands. Total acres thinned have declined steadily over the life of the current Forest Plan.

Uneven-aged harvesting occurs on the Forest; both single tree selection and group selection are used. There have been areas managed by group selection, with thinning between clearings created through group selection. In either uneven-aged silvicultural system, both regeneration harvesting and thinning occur during the same entry into the stand. The regeneration openings range in size from the space of one tree to up to two acres (Forest Plan standard). An estimated 4,191 acres have been managed through single tree selection over the past 18 years. It is surprising that the majority of acres managed under this system, about 53%, have come from lands under MP 3.0. Uneven-aged silvicultural systems are to be used on MP 2.0 lands, and while the total acres managed under single tree selection from this MP seems low, these lands only make up about 3% of the Forest.

An estimated 913 acres have been harvested through group selection since 1986. These totals include group selection combined with thinning between group openings. The majority of acres (79%) managed through group selection have come from MP 2.0 lands.

Intermediate harvesting has been used to salvage mortality on the Forest. An estimated 1,930 acres have been treated since 1986. Again, the majority of management (80%) has occurred on MP 6.1 lands.

In 2001 the Forest held an interdisciplinary meeting to review Forest Plan direction on use of clearcutting and planting of oak and conifer. The group compared Forest Plan standards, guidelines, and management direction on these subjects, and discussed changes in legislation, scientific information, Forest Service policy, etc. that have occurred since the 1986 Forest Plan was authorized. The changes were discussed to determine impacts to the Forest's ability to implement the Forest Plan or achieve assigned outputs. The group also identified management direction, standards, or guidelines to address in Forest Plan revision.

In addressing Forest Plan direction on clearcutting, the group sought to answer the question, why are we clearcutting less than the Forest Plan projected? The group noted that there are two aspects to this question. First, why is the Monongahela National Forest harvesting less commercial timber in general? Second, why is the Forest using other even-aged methods instead of clearcutting?

As the fiscal year (FY) 1999 Monitoring Report for the Forest National Forest indicated, the volume of timber offered for sale has declined over the years. Several factors have contributed to the overall reduction in timber harvests since the Forest Plan was approved:

- National policy changes initiated by the Chief of the Forest Service
- Unexpected discovery of threatened and endangered species in management prescriptions suited and available for commercial timber production
- New mitigations for protection of riparian areas and reducing sediment movement to stream channels
- Fewer new roads have been built; with emphasis shifting to the use of existing roads
- Escalating complexity of National Environmental Policy Act (NEPA) analysis, including costs, time to complete analyses, and appeals of decisions

As mentioned previously, the area regenerated through clearcut harvesting has declined since 1993 from an average of an estimated 1,285 acres per year to 384 acres per year in 1994 – 2003; in 2002 only 46 acres were regenerated through clearcut harvesting. The use of alternative even-aged regeneration harvest methods has increased as a result of:

- In the early 1990s, Chief Robertson directed forests to reduce the use of clearcutting, and only use clearcutting when shown to be the optimal method for achieving specific management objectives.
- Emphasis on retaining leave trees to minimize visual effects of even-aged regeneration harvesting
- Efforts to provide structural diversity in regenerating stands to benefit various wildlife species.

The alternative even-aged regeneration harvests used on the Forest include shelterwood and two-aged harvests. The overstory in a shelterwood harvest should be removed after regeneration is established underneath, however this may not always occur. In the two-aged regeneration method, the residual basal area is reduced to 15 to 40 square feet per acre (including culls and den trees) and this age class is retained through to the next removal harvest (end of the rotation). There are concerns that the residual basal area in a two-aged harvest, or in a shelterwood harvest that is not removed will eventually shade the regeneration and inhibit growth.

Generally, commercial timber harvest has been the means by which the Forest manages age class distribution, and to some extent, forest types on lands available and suitable for commercial timber management. The Forest Plan allows commercial timber management on approximately 36% (~331,000

acres) of the Forest. The remaining 64% of the Forest is expected to change primarily through natural events and succession. On approximately 23% of the Forest (Wilderness and MP 6.2), natural forces are the disturbance factors expected to impact forest type and age class diversity.

A variety of tree species currently exists in forested stands of the Forest. The Forest contains stands with largely one tree species and stands that have a mix of hardwoods and conifers with a variety of shade tolerant and intolerant tree species.

Shade tolerant, intolerant, and moderately tolerant tree species are found on the Forest. For example, sugar maple, beech, and hemlock are considered shade tolerant, while black cherry, some oaks and hickories, yellow poplar, and birch are considered shade intolerant. Shade tolerance is based on the requirements of seeds to germinate and the young trees to grow into the upper canopy. Shade intolerant trees need full sunlight to maximize seed germination and growth. Shade tolerant trees have seeds that are able to germinate under the shade of a forest canopy and continue growing with only the partial sunlight that filters in below the shade of other trees.

Major forest types on the Monongahela are broken out as shown in the table below. More information on these types can be found in Appendix A.

Table C-5. Current Major Forest Type Distribution for the MNF

Forest Community Type	Acres	Percent of Forest
Mixed mesophytic/cove hardwood	360,000	39
Mixed oak	250,000	27
Northern hardwood	170,000	18
Pine-oak	51,000	6
Spruce/fir/hemlock	51,000	6
Totals	**882,000**	**96**

Brush or shrub lands comprise about 1% of the Forest (about 9,000 acres) and are classified as either upland or lowland. Open areas with grass, forbs, or other herbaceous ground cover comprise a little more than 2% of the Forest (about 20,000 acres). The brush, shrub, and open forest types do not include lands that are regenerating after a regeneration harvest; however, trees may not be filling in all of these areas.

A combination of even-aged and uneven-aged management or no active management of the timber resource perpetuates the current forest. Non-commercial methods and natural events contribute to diversity of forest types and age classes.

An estimated 2% of the Forest is comprised of stands of trees less than 15 years of age. The majority of the Forest trees are over 60 years old (84%). About 9% of the Forest trees are over 105 years old. The age of a stand can be considered an average as it is usually estimated from trees representative of the majority of the stand. Many stands include multiple age classes depending on previous harvest or natural disturbances. There may be individual trees in a stand either older or younger than the given stand age. These figures are for all management prescriptions and forest types.

Need For Change

There is a need to update standards and guidelines to address silvicultural and resource protection methods. The following items need to be reviewed, and possibly modified, during Plan revision:

- Size of even-aged regeneration units – The maximum size of any even-aged regeneration unit is 25 acres in the 1986 Plan, although NFMA allows a maximum of 40 acres. There are provisions for exceeding this size; however it may be desirable to change the Forest Plan. Average unit size for the past 18 years has been about 15 acres. Wildlife habitat fragmentation concerns may be addressed by having fewer but larger regeneration harvest openings.

- Spacing of even-aged regeneration units – The 1986 Forest Plan standard is 1/8 of a mile between even-aged regeneration harvest units. The area between units should also be a manageable stand of trees. If the current trend of small-sized regeneration harvest units is likely to continue, then having the flexibility to group small harvest units closer to reduce edge effects may be desirable.

- Shape of even-aged regeneration harvest units – The 1986 Forest Plan (page 174) states that long, narrow clearcuts with an undulating perimeter are preferred. This guidance may not still be applicable given the current knowledge of wildlife habitat needs.

- Definition of openings – An opening is currently defined as a harvest area where the vegetation is less than 20% of the height of the surrounding vegetation by the 1986 Forest Plan. We may want to clarify terms used in the Forest Plan to differentiate between a temporary opening of a regeneration harvest unit and the grass and forbs dominated openings generally considered permanent or semi-permanent and created for wildlife habitat.

- Percent of size classes – If the size class guidelines for MP 3.0 areas are not being met, rotation ages may need to be adjusted.

- Frequency of entry – Vegetative management is not occurring as frequently as allowed, mostly because of the time to prepare NEPA documents and analysis, more appeals of decisions, and the longer time to complete timber sales. The implication of these delays needs to be examined and guidelines modified to consider these effects. The definitions of quiet time and major projects also need to be clarified or adjusted.

- Clearcutting as the normal regeneration harvest method – For reasons previously noted, clearcutting has not been the main even-aged regeneration harvest method for many years. The sections of the Plan where silvicultural systems are described need to be updated.

- Grapevine management – Grapevine management guidelines need to be evaluated for increased flexibility. Grapevine management was an issue in the development of the 1986 Forest Plan, is it still a concern of the public? Grapevines damage regenerating stands of young trees and some areas have not been regenerated because grapevines could not be treated before harvest. Are the effects to wildlife habitat greater if localized grapevines are lost or if mast-producing trees are not regenerated?

- Rotation ages – Current science should be reviewed to confirm appropriate rotation ages for tree species. For example, in MP 3.0 areas, should rotation ages be based on maximum age of tree species, or when loss from mortality is unacceptable, or when economic loss becomes unacceptable, or based on wildlife species needs?

- Age class distributions – Management direction may need to take into consideration that the distribution of age classes may vary depending on the ecological setting of an area.

Changes Under the Revised Forest Plan

The direction on size restriction (25 acres maximum) of even-aged openings has been removed in the Revised Forest Plan, allowing the Forest to default to regional and national standards (40 acres maximum, unless Regional Forester approval is obtained). Although it is expected that most even-aged openings would remain relatively small, the elimination of the 25-acre restriction provides more flexibility at the project level to address wildlife and ecological concerns.

The direction on spacing of even-aged openings has been carried forward into the Revised Plan and combined with the definition of openings. It was felt that these were important considerations, not only from a vegetation management perspective, but also to provide for wildlife security and travel.

The direction on the shape of even-aged harvest units was changed to a guideline in the Revised Plan that focuses on areas of visual concern.

Size and age classes were not addressed through rotation ages in the Revised Plan. In fact, 1986 Plan rotation age requirements were dropped to provide more flexibility for vegetation management. One reason is that most management that occurs in the next couple of planning periods is only going to affect one size/age class, due to the current even-aged nature of forest stands. Age classes are addressed by desired conditions in the revised Plan. If younger size or age classes are desired on suitable timber land, they can be achieved through regeneration harvest, now that management is not constrained by rotation ages. If older size or age classes are desired, they can be achieved through natural succession over time on unsuited lands where commercial vegetation management is constrained or prohibited (wilderness, recommended wilderness, backcountry recreation, special areas, channel/wetland buffers, listed species habitat, etc.). Rotation ages can be more appropriately applied to individual stands at the project level through site-specific silvicultural prescriptions.

Frequency of entry is described for management prescription areas where timber harvest may occur. The quiet time and major project restrictions in MP 6.1 were replaced in the Revised Plan with one standard that limits the overall disturbance in a prescription area unit of the planning period. This change is designed to increase management flexibility while providing for wildlife security over time.

Clearcutting is no longer referred to as the “normal” cutting method for any prescription in the Revised Plan. It has to be the optimal method for the situation in which it is being applied.

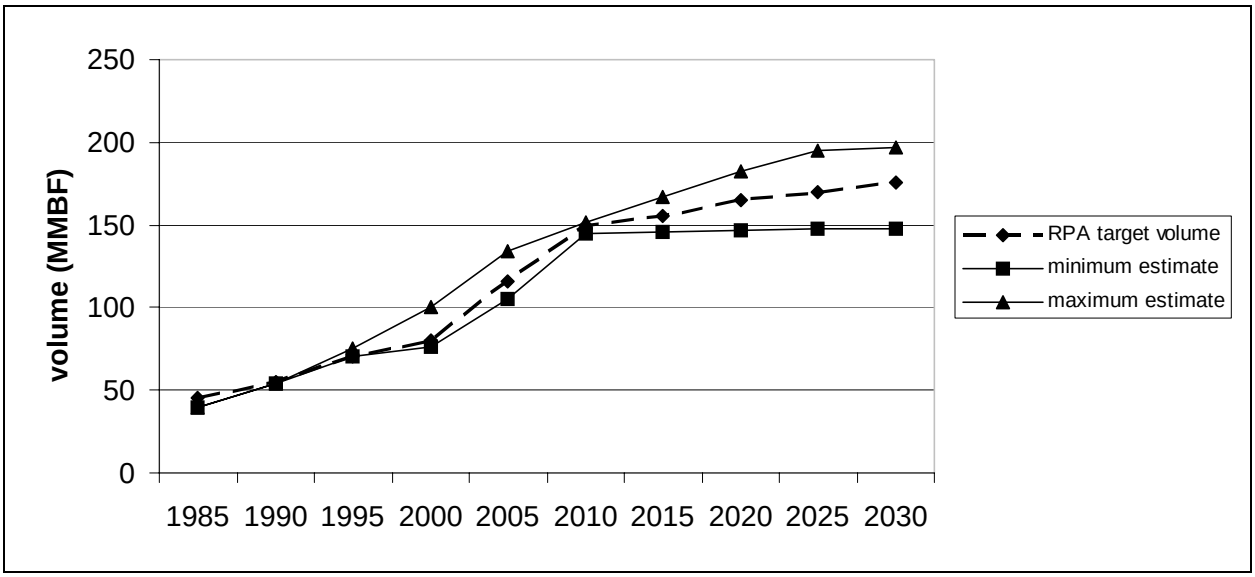
Timber Production

For 1986 Forest Plan, a group knowledgeable of the timber markets in the state met to estimate future demands. The group represented the Monongahela National Forest, the West Virginia Division of Forestry, and the Research and State and Private branches of the USDA Forest Service. Of interest for this Plan revision are the group’s basic assumptions on timber markets and demands.

Essentially, the group agreed with the Regional Plan RPA (Resources Planning Act) target and felt that within 50 years from 1982, the timber industry would be using 60 to 80% of the annual growth. Figure 1 is an approximation of the timber demand projected by the group in 1982.

All the group’s assumptions were reviewed to determine if they have come true, continue to be logical assumptions, or whether conditions have changed such that they no longer apply. The group admitted to taking an optimistic viewpoint based on the fact that the wood products industry in the state has adjusted dramatically to supplies over the past century. Below are the group’s basic assumptions and discussion about whether the assumptions held true:

Figure C-1. Timber Demand Projections for the Monongahela National Forest



1. The current state of the National's economy will not persist and a 2.5% to 3.5% annual increase in the gross national product (GNP) can be expected.

In 1991, the U.S. Department of Commerce, Bureau of Economic Analysis began using gross domestic product (GPD) to describe the United States economy in place of GNP. GDP and GNP are generally similar numerically; GDP measures production in the US no matter who produces it and GNP measures production by US citizens regardless of where they are. According to the Bureau of Economic Analysis, the GDP increased and average of 3% per year from 1986 to 2002 based on chained 1996 dollars. This assumption held true.

2. Total integrated harvesting and milling operations will become more commonplace. The technology for an integrated mill is currently available and will improve over time.

From conversations with people knowledgeable of the wood industries in the state (Steve Milauskas, personal communication, Baumgras, et al. 2003), total integrated harvesting and milling operations have not become commonplace in West Virginia.

3. Current utilization standards will change from a fixed top diameter to use of the total tree.

Utilization standards for the Forest have not changed to include whole tree harvesting. Generally whole trees or the tops of trees (if removed from the harvest unit) are utilized as chips. The Forest is not offering sales for bid based on any demand or utilization of chipped wood. Based on conversations with people knowledgeable of the wood product industry in the State, there is not likely to be a demand for whole tree harvesting. The greatest value in West Virginia hardwoods is in the bole. Processors of engineered wood products are often species specific in their preferences and high-density species such as oaks are not desirable for these products. It is unlikely that whole tree harvesting will become common in Appalachia, unless the United States reverses the trend of declining domestic paper production, or implements policies favoring biomass fuels. Also, the topography of the Monongahela does not favor

high-tech or whole-tree logging systems, and with the emerging concern of soil nutrient loss through acid deposition, there is a growing recognition that tops and limbs high in calcium should be left on site where there is a demonstrated need.

4. There will be a gradual shift from emphasis on quality sawlog production/demand to wood fiber thereby making smaller diameter trees more competitive.

Smaller trees and smaller wood from the tops of larger trees are more often utilized than in the early 1980s. At the writing of the 1986 Forest Plan, there was little market for pulpwood. There is now an oriented strand board plant within trucking distance of the Forest. The hardwood industry in West Virginia is more diversified than other sates including markets for pulp, veneer, dimension lumber, oriented strand board, plywood, and laminated veneer lumber. As the trees on the Forest age, and since high-grading has not occurred, it is predicted we are heading into a period of high quality hardwood products (Luppold, personal communication). However, the highest value logs pay their way out of the woods. Consideration of lower grade material is secondary when determining sale economics but could add to the perceived value of a sale if economical end uses are present. Smaller diameter trees will not become more "competitive"; on steep terrain where high-tech processors cannot be used effectively, small trees cost more to harvest than do large trees.

5. Exports of wood fiber from the eastern one-half of the USA to Europe will increase. The USA may eventually become a net exporter of wood fiber products.

Exports of hardwoods from the eastern half of the United States to Europe have increased and the eastern United States is a net exporter of hardwood lumber. The United States continues to be a net importer of wood, but in 2000 was the third largest exporter of hardwood logs (www.bea.doc.gov). Asia has become the largest exporter of hardwoods in the world. This was probably not predicted when the Forest plan was written. Exports of high quality hardwoods from the eastern United States are expected to increase (Luppold, Milauskas, personal communication). For softwood wood fiber, there has been a decline in the amount of domestic wood consumed by the pulping industry in the northeastern United States. The United States as a whole will likely never be a net exporter of wood products (Baumgras 2003).

6. More wood will be substituted for other materials such as steel, aluminum, etc., due to its low energy costs to produce.

There is some market share pressure on wood in residential construction (from steel) and decking (from plastics). However, there are efforts underway to increase use of wood, particularly engineered wood products, in nonresidential building construction. The trend of lumber made from either recycled plastic or wood waste mixed with plastic was probably not considered when the Forest Plan was written. Demand for plastic and wood-plastic composite materials in U.S. construction is predicted to grow nearly 13 percent annually through 2006 (www.freedonia.ecnext.com/coms2/ summary_0285-228282_TM). The niche for Appalachian hardwoods in general, and West Virginia hardwoods in particular, seems to be the continued production of high quality hardwood lumber for applications not easily substituted by aluminum and steel.

7. The shift of the wood industries from the West to the Southeast and Atlantic seaboard states will continue.

The Southeast and Atlantic seaboard states are contributing more to the Nation's wood supply as the volume of harvests decline from western National Forests. The distribution of ownership of timberlands is not uniform across the country. In 1992, 55% of the industrial timberlands were in the South (Virginia to Texas and Oklahoma) and 23% in the North (Maine to Maryland to Missouri to Minnesota). Non-

industrial private timberlands are heavily concentrated in the East, with more than 87% in the eastern half of the country. About 75% of national forest timberlands are west of the 100th Meridian (Powell et al. 1994). With this distribution of ownership, the relationship to declines in federal timber harvests in the West and increases on industrial lands in the South and North is expected and likely to continue.

8. The taxing structure on private timber lands will become less favorable thereby placing greater demands for the public lands to produce timber, especially large quality sawlogs which require longer rotations.

The taxing structure of private lands has not become less favorable to timber harvest or forest management (Milauskas, personal communication), and greater demands have not been placed on public lands to produce large quality sawlogs. There are tax incentives in place for private landowners wishing to use the State's Forest Stewardship program. However, as practices such as diameter limit and logger's choice continue on private forest land, the number of high quality sawlogs will decline. Even though demand for large diameter, high quality timber may increase and much of this timber is on the Monongahela National Forest, most industry owners do not expect much of this wood to be available for harvest (Baumgras 2003).

9. Wood fiber processing technology will continue to improve thereby making such processes as press drying, flake board, oriented stand board, etc., very competitive.

This assumption came true for the region and the State. Two OSB plants are operating in the State, one within trucking distance to the Forest. It is likely that the State will see greater production of these types of products.

10. Wood for energy (fuelwood) will not play a big role regarding demand from NFS lands because of limited urbanization and apparent adequate supplies from private lands.

The Monongahela National Forest has not seen a significant removal of fuelwood. However, the relationship described in the assumption is confusing. Rural households are more likely to use fuelwood in large amounts for heating, as opposed to urban households.

11. Timber demand is at fair market price levels. At other price levels it may be different.

This assumption still holds true. At any given market price (assuming no price distortions) the quantity supplied will be in long-term equilibrium with the quantity demanded. Shifts in supply and/or demand can cause price fluctuations resulting in new equilibriums (Baumgras 2003). In effect, this assumption is more a general statement on the timber market than an assumption.

The Forest Plan estimated timber production by year for 10-year periods. For the first 10 years, the Forest Plan estimated a maximum of 57.1 million board feet (MMBF) could be harvested (see page 46). An estimated 57.9 MMBF was projected for the second 10-year period, and a maximum of 60.1 MMBF was projected for the third 10-year period, which has just begun.

Table C-6 shows the volume of commercial timber products offered for sale, sold, and harvested for fiscal years 1987 through 2005. The volumes differ because some portion of the sold volume in any fiscal year may have been offered in a previous fiscal year or harvested in a succeeding year. These volume figures exclude the volume of timber products sold through the permit system. These figures represent the volume of timber products sold through sealed bid and removed under timber sale contracts.

Table C-6. Timber Volume (MMBF) Offered, Sold, and Harvested by Fiscal Year from the MNF

Fiscal Year	Volume Offered	Volume Sold	Volume Harvested
1987	34.3	30.0	36.0
1988	40.1	36.0	50.7
1989	40.5	39.0	36.9
1990	39.1	34.0	28.3
1991	39.0	39.0	36.4
1992	38.7	35.4	36.6
1993	30.0	30.0	33.5
1994	32.8	26.7	20.9
1995	29.7	25.6	22.1
1996	15.2	12.2	28.3
1997	17.0	12.7	25.2
1998	14.6	9.9	24.5
1999	0.9	9.6	24.2
2000	15.2	3.9	13.9
2001	13.9	13.2	7.5
2002	2.0	12.8	7.8
2003	0.9	2.1	11.7
2004	1.1	2.1	9.0
2005	12.6	8.4	8.2

As the Forest Plan has been implemented, some land designations made in the Forest Plan have been determined to be not entirely appropriate. For example, some land designated as MP 3.0 on which the production of timber products is to be emphasized, support populations of threatened and endangered species, or are underlain by sensitive soils, or have limited access. All of these limitations on the commercial production of timber were not considered when the Forest Plan Allowable Sale Quantity (ASQ) was set. Land allocations will be reviewed in Forest Plan revision, and these concerns need to be considered. Objectives will be developed for management on both suited and unsuited lands.

The Forest Plan's final "timber base" of 331,160 acres was expected to remain constant regardless of any increase in the size of the Forest (e.g. via purchase), and would be the total acreage of the Forest that would be managed for timber over a 200-year period. Provided Forest Plan standards and implementation remain constant, the maximum volume of timber potentially available to industry, the ASQ, was expected to change each decade as the average volume per acre increases as stands mature. The ASQ provided in the first decade of the Forest Plan (1987-1996) was 43 MMBF per year, less than the projected 57 MMBF because there was no market at the time for the large volume of small timber. ASQ in the current decade (1997-2006), under constraints of the 1986 Forest Plan, is about 48 MMBF per year. Again this is less than the projected 57.9 MMBF because of a projected lack of market for small timber. Projected ASQ on the 331,160 acres was expected to increase gradually over the first five decades and then stabilize for a long period at an annual rate of 77 MMBF per year on the 331,160 acres of timber base. At the end of the first 200-year rotation, the long-term sustained yield of timber under the Forest Plan was projected to be approximately 85 MMBF per year.

Need For Change

There is a need to re-visit suitable lands determinations, revise supply estimations, and recalculate ASQ based on the changes noted above.

Changes under the Revised Forest Plan

Timberland suitability and ASQ have been assessed and updated for Forest Plan revision. See the Timber Supply section of Chapter 3 of the EIS. Spectrum modeling to achieve desired vegetation conditions given certain known constraints indicates that the ASQ is 10.5 MMCF or 63 MMBF per year. This amount represents the maximum amount of timber production that may occur in any given year, rather than the actual amount of production that will occur, which can be influenced by such factors as budget, personnel, appeals, litigation, natural events, or shifting Forest priorities. As seen in Table C-5, the actual amount of timber offered, sold, or harvested can vary greatly depending on many variables.

The Total Sale Program Quantity, or TSPQ, represents both the maximum amount of timber projected on suited timberlands (ASQ), plus the maximum amount of timber that could be produced on lands not suited for timber production. This latter amount is derived from Forest Plan objectives (Forest-wide objective VE03 and MP objectives 6136 and 4107) for vegetation management to enhance Indiana bat habitat and spruce/hardwood ecosystem restoration on 4,000 to 12,000 acres over the next decade. Using a combination of silvicultural treatments (thinning, uneven-aged, shelterwood, two-aged), the Spectrum model estimated that a maximum of 2.17 MCF of timber per acre may be produced. From a maximum of 12,000 acres treated, a projected maximum of 26,000 MCF per decade could be produced, or about 15.6 MMBF per year. Added to the ASQ, this amount would contribute to a modeled annual maximum of 13.1 MMCF or 78.6 MMBF of TSPQ that could be produced. As noted above, the actual amount produced will depend on many variables.

SOIL, WATER, AND AIR

The Monongahela National Forest was established in 1920 with about 7,200 acres of land purchased through the Weeks Act. This Act authorized the purchase of land for long-term watershed protection and natural resource management following massive cutting of the Eastern forests in the late 1800s and at the turn of the century. Today the Forest has over 919,000 acres of public lands in 10 counties in West Virginia, making it the fourth largest National Forest in the 20 northeastern states.

The Forest is unique in that it contains the headwaters of five major river systems; the Monongahela, Potomac, Greenbrier, Elk, and Gauley. Twelve rivers on the Forest are considered eligible for potential inclusion in the National Wild and Scenic Rivers System. In addition, the Monongahela has 129 miles of warm water fishing and 576 miles of trout streams. About 90% of the trout waters of West Virginia are within the Forest.

The soils of the Monongahela National Forest are developed under a mesic climatic temperature regime where annual air temperatures are 48 degrees Fahrenheit and a soil and moisture regime where annual precipitation is 58 inches. The parent material that underlies the soils is comprised of sedimentary geology that makes up the Appalachia Ridge and Valley and the Allegheny Plateau.

The Forest lies near the industrial heart of the United States. It is within a day's drive of a large percentage of the United States population, and is surrounded by a high concentration of coal-fired electrical power production facilities; the leading source of sulfur dioxide (SO2) and nitrogen oxide (NO4) emissions. This network of coal-fired electrical power plants includes the generally defined "Ohio River Valley" and Tennessee Valley Authority (TVA) sources. Emissions created by the power plants, in combination with the population's use of fossil fuels, have a substantial impact on Forest air quality.

We strive to continue the tradition of watershed protection, restoration and stewardship that began on this National Forest over 80 years ago.

The health of the aquatic ecosystem across the Forest has been heavily influenced by the extensive clearcutting that occurred during the turn of the 20th century. Construction of railroads doubled in the 1880s and then doubled again in the 1890s, allowing access to and transportation of the timber resource. As a result, much of what is now the Monongahela National Forest had been clearcut by the late 1920s. Watershed and stream channel conditions still exhibit a number of impacts associated with the extensive logging that occurred.

Stream ecosystems continue to suffer from limited large woody debris, elevated sediment levels, and effects from substandard roads located within close proximity to stream channels. Recovery from the impacts of activities at the last turn of the century is a long-term process.

In 1994, the Forest adopted interim guidelines for managing riparian areas. The interim guidance established a riparian area strip width for perennial, intermittent, and ephemeral streams, lakes, and impoundments and wetlands. It also defined the management of the riparian area strip with respect to timber removal. The interim guidelines were established to give more protection to the aquatic resource and make the standards easier to implement.

A Riparian Working Group was formed in 1999 to address issues relating to riparian area management, watershed protection, and restoration. The group determined that riparian dependent resources were not being adequately protected with either the Forest Plan direction or the interim guidelines. New riparian management guidelines were developed to address the deficiencies. These new guidelines focused primarily on headwater channel protection, channel stability, large woody debris recruitment, and basal area retention. The 1986 Forest Plan was not amended to include these guidelines. Instead, the Forest applied these site-specifically as ground conditions warranted.

The primary effect of the new recommendations is that more protection is given to smaller intermittent and all ephemeral streams. These recommendations help protect the critical headwater channels form loss of stability, down cutting, and sedimentation.

The soils on the landscape of the Forest have been subject to the effects of excessive cutting and burning. This resulted in damaging floods, severe erosion, topsoil loss, and pollution of streams used for water supply. Severe fires further increased erosion. The fires at the turn of the century burned so hot that soil carbon was lost to the atmosphere and soil productivity in some areas on the Forest was irretrievable. Although there has been some recovery for the soil resource in the past century, many soils on forested landscapes on the Forest still have thin surface horizons and in some areas remain non-existent.

The 1986 Forest standards and guidelines for soil protection mainly center on soil disturbance, which could lead to erosion and the resulting sedimentation of streams. Soil erosion and sedimentation, and protection of water quality were the two primary concerns of the soil resource in the 1986 Forest Plan. However, soil erosion is still a significant issue at present. Data from recent water quality monitoring for sediment levels in streams on the Forest reveals that many streams have high levels of sediment.

Soil productivity is emphasized in the Forest Plan through direction that calls for fertilization and liming of disturbed soils (p. 79 and Appendix S). However, there is no reference to undisturbed soils that may be affected by base cation depletion that could result in loss of soil productivity. Also, the fertilization and liming practices are directed at reestablishing vegetation to prevent erosion or soil movement from the disturbed site, and not at benefiting growth of existing vegetation.

Historically high sulfate (SO^4) deposition from sources in the Ohio River Valley has contributed to acidification of streams and could affect soil productivity on parts of the Forest. In fact, research

scientists have found evidence of nutrient depletion occurring in certain soils on the Forest. Sulfates are also primary contributors to visibility impairment or regional haze.

Although the 1986 Forest Plan acknowledges these issues and provides for air pollution effects monitoring, new information indicates that acid deposition may be affecting soil productivity and water quality. Since the Plan was written we have more data showing that acid deposition may be affecting the base cation status of sensitive soils on the Forest.

Need For Change

Key elements of the current 1999 riparian management standards and guidelines need to be incorporated into the revised Forest Plan. There is concern that the riparian management guidelines developed in 1999 are still difficult to implement on the ground. Distinguishing between different channel types in the field is often difficult even for hydrologists. Seasonal variations in flow and leaf cover are two factors that can influence channel identification. An error in the identification of channel type could result in a lower level of protection than is required by the guidelines. The basal area requirements in the guidelines may also need to be revisited. There is an opportunity to make riparian management guidelines easier to understand and implement.

Under the 1986 management direction, the level of woody debris in streams across the Forest is recovering at a very slow rate. The need for woody debris in the streams remains high. Riparian Management direction needs to address this issue in order to help streams recover. With increased knowledge over the past two decades about the importance of woody debris in streams and aquatic ecosystems, this revision provides an opportunity to re-evaluate our management direction for streamside zones. In addition, Geographic Information Systems (GIS) technology provides an opportunity to determine how changes in management will impact streams as well as timber production.

The 1986 Forest Plan does not address the issue of acid deposition. Plan Revision gives us the opportunity to look at areas that are highly susceptible to impacts caused by acid deposition and to develop management direction to address and minimize these impacts.

There is regional interest in soil productivity relating to atmospheric deposition and carbon cycling. Experiment stations and universities desire to continue cooperation for mutual benefit. The Forest is involved with numerous cooperators in a bio-complexity proposal on the issue of sustainability. Current science on soil nutrients, especially calcium, does not appear to support short rotation, whole-tree, biomass harvest on the Forest. The Forest does not allow whole-tree harvest; however, short rotation is a concern because it more rapidly takes calcium off-site than the traditional 90-120 year rotation where clearcutting is applied. The bole, bark, and roots of a tree represent about 50% of the calcium; leaves about 3%; and limbs and tops about 40%. These impacts need to be considered in the larger environmental setting, including other resource impacts.

Opportunity in Forest Plan Revision exists to address these concerns and to provide for monitoring soil productivity in relationship to base cation depletion and timber harvesting. Revision efforts should center on formulating a methodical approach to assessing risk, providing mitigation, and monitoring this issue.

Changes under the Revised Forest Plan

Revised Forest Plan direction expands desired conditions and goals for the soil, water, and air resources in order to better address restoration, maintenance, and improvement of resource conditions. The Revised

Plan also includes objectives to restore aquatic and riparian habitat, and to decommission roads, both of which should help improve watershed conditions during the planning period.

Key elements from the 1999 interim guidelines were incorporated into Revised Forest Plan direction. More flexibility was also provided to adjust to variable on-site conditions. Basal area requirements were replaced with explicit direction as to when and where it is appropriate to manage vegetation within channel and wetland buffers. These buffer areas are not considered part of the suitable timber base, and the general lack of programmed harvest within them should provide for large woody debris.

Key elements for the 1986 Plan, including Appendix S, were incorporated into Revised Forest Plan direction for the maintenance of soil quality and productivity.

The revised Forest Plan provides management direction and a monitoring strategy to address the potential effects of acid deposition on soil nutrient depletion.

BENCHMARKS

Benchmark analyses are included as part of the Analysis of the Management Situation (AMS). The purpose of the AMS is to "*provide a basis for formulating a broad range of reasonable alternatives*." The benchmarks define the range within which alternatives can be constructed. Hence, there is an emphasis on minimum and maximum conditions for national forests, e.g., minimum level of management, maximum timber potential, etc… Benchmarks themselves do not constitute alternatives since alternatives attempt to integrate management of all resources, and benchmarks do not.

Benchmarks approximated economic and biological resource production opportunities and were useful in evaluating the compatibilities and conflicts between individual resource objectives. The 1986 Forest Plan benchmarks were considered sufficient for some resources—including recreation and range—for the following reasons:

- Outputs and activities have not changed dramatically from 1986 projections.
- Outputs and activities are not projected to change dramatically in the next planning period.
- 1986 benchmark ranges were sufficiently broad in scope to address projected changes.

The following three benchmarks were re-analyzed during plan revision:

1. Minimum Level Management
2. Maximum Timber Production
3. Maximum Net Present Value

Minimum Level Management - The minimum level management benchmark defines actions needed to maintain and protect the unit as part of the National Forest System. The benchmark focuses on base levels of management sufficient to protect resource integrity; thus, outputs are possible but incidental in nature.

Minimum level management objectives were:

- Protect the life, health, and safety of incidental users,
- Protect against land and resource damage from and to adjoining lands of other ownership,
- Conserve soil and water resource,
- Prevent significant or permanent impairment to the productivity of the land,
- Administer unavoidable, non-Forest Service special uses and mineral leases, licenses, permits, contracts, and operating plans.

For the minimum level management benchmark, no scheduled harvesting activities occurred and vegetation followed natural succession. Developed campgrounds were closed, and maintenance was only for those facilities needed to support basic ownership activities. Dispersed recreation (hiking, hunting, fishing, etc…) was not promoted but was allowed. Cultural resources were identified and protected when being impacted by other resource activities.

The primary purpose of this benchmark was to develop a baseline for subsequent analyses and to be a building step for alternatives. Consideration of the objectives stated above aided in the development of resource management standards and guidelines.

Maximum Timber Benchmark - The maximum timber benchmark estimates the maximum physical and biological production of timber together with costs and benefits. There is no requirement to consider cost efficiency. The NFMA regulations, at 36 CFR 219, outline minimum specific management requirements to be met in accomplishing goals and objectives for a national forest. The requirements guide the development, analysis, and eventual implementation and monitoring of forest plans. The requirements set forth guidance on resource protection, vegetation manipulation, silvicultural practices, riparian areas, soil and water, and diversity of plant and animal communities.

A series of assumptions were used to define the analysis conducted with Spectrum:

- Objective function was maximum timber for ten periods
- All tentatively suitable lands were available for scheduling
- Harvest of existing stands occurred no earlier than Culmination of Mean Annual Increment
- Base sale schedule cannot exceed long-term sustained yield capacity
- No demand limitations placed on timber production.

Several key results of the maximum timber benchmark were:

- 753,000 tentatively suitable acres were allocated to timber production
- The long-term sustained yield capacity of 43 MMCF/year (258 MMBF/year) was never reached in the planning horizon
- Sale schedule for the first five decades.

Table C-6. Maximum Timber Benchmark Sale Schedule

Indicator	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Volume (MMCF/year)	41	41	41	41	41
Volume (MMBF/year)	246	246	246	246	246

Maximum Net Present Value (NPV) Benchmark - The maximum NPV benchmark estimates the maximum net present value of those resources having an established market or assigned value. Cost efficiency and revenue maximization are the focal points of this benchmark. Similar to the maximum timber benchmark, minimum management requirements are considered in formulating the model.

A maximum NPV benchmark was completed for the timber resource. A maximum NPV benchmark for minerals was not completed. The USDI Bureau of Land Management is responsible for issuing and administering federal mineral leases on NFS lands. Because the Forest cannot predict the nomination of areas for leasing, it is not possible to schedule the regulated production of mineral resources from the Monongahela.

The assumptions used for this analysis were similar to those for the Maximum Timber Benchmark. Results are shown in Table C-7

Table C-7. Maximum Net Present Value Benchmark Sale Schedule

Indicator	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Volume (MMCF/year)	40	40	40	40	40
Volume (MMBF/year)	240	240	240	240	240

REFERENCES

Baumgras, J., M. Bumgardner, B. Hansen, W. Luppold. 2003. Reply to MNF timber demand assumptions, August 25, 2003. Unpublished.

Emery, M.R., C. Ginger, S. Newman, and M.R.B. Giammusso. Special forest products in context: Gatherers and gathering in the eastern United States. USDA Forest Service, Northeastern Research Station. General Technical Report, NE-306.

Kolb, T.E., M.R. Wagner, and W.W. Covington. 1995. Forest health from different perspectives. In: Eskew, L.G., comp. Forest health through silviculture; proceedings of the 1995 national silvicultural workshop. General Technical Report RM-GTR-267. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.

Luppold, William. 2003. Personal communication with Melissa Thomas-Van Gundy regarding the hardwood industry in West Virginia, including estimates of demand and prices.

Mielke, M.E., C. Haynes, and W.L. MacDonald. 1982. Beech scale and *Nectria galligena* on beech in the Monongahela National forest, West Virginia. Plant Disease. 66:851-852.

Milauskas, Steve. 2003. Personal communication with Melissa Thomas-Van Gundy regarding the hardwood industry in West Virginia, including estimates of demand and prices.

National Forest Visitor Use Monitoring National and Regional Project Results, September 2002

Studlar, S.M. 2003. Moss harvest in West Virginia: Target species and incidental take. Unpublished Report submitted to Monongahela National Forest.

USDA Forest Service, Monongahela National Forest. 1990. Selection, designation and management of old growth. Unpublished report.

West Virginia Division of Tourism, 2002, Annual Report

Appendix D

Management Indicator Species

Table of Contents

Page No.

Table D-1. Revised List of Management Indicator Species D-1

Table D-2. Disposition of Management Indicator Species from the 1986 Plan D-2

Table D-1. Revised List of Management Indicator Species in the 2006 Forest Plan

Species	Global Abundance Rank	Federal Conservation Status	Reasons for Selection	Habitat Objective
Wild (naturally reproducing) brook trout (*Salvelinus fontinalis*)	G5	None	High-interest game fish. Top-level predator, population changes reflect an integration of effects to water quality and stream conditions across aquatic ecosystems influenced by management on National Forest System lands. The Forest is developing an aquatic monitoring strategy that will include brook trout.	Maintain at least 560 miles of coldwater stream habitat capable of supporting wild, naturally producing brook trout, a MIS.
Cerulean warbler (*Dendroica cerulea*)	G4	None	High-interest non-game species. Associated with large trees, gaps, and complex canopy layering characteristic of old-growth forests. A forest interior species that is believed to be sensitive to fragmentation. The Forest and WV DNR are cooperating on an ongoing songbird point count monitoring program that is expected to provide Forest-wide data on this species.	Maintain at least 50,000 acres of mid-late and late successional (>80 years old) mixed mesophytic and cove forest to meet habitat needs for cerulean warbler, a MIS.
Wild turkey (*Meleagris gallopavo*)	G5	None	High-interest game species. In the Appalachians, strongly associated with oak mast. Requires herbaceous openings for brood range and is expected to reflect the effectiveness of the cooperative Forest-WV DNR wildlife opening management effort. Uses shrub/sapling stands for nest sites. Ongoing harvest data collected by WV DNR provides a Forest-wide population index.	Maintain at least 150,000 acres of 50-150 year old oak and pine-oak forest in MPs 3.0 and 6.1 to meet habitat needs for wild turkey, a MIS.
West Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*)	T2	Endangered	High-interest endangered species. Appears to be associated with certain late successional characteristics (snags, canopy gaps, moist microclimate, co-dominance by spruce). The Forest is developing a long-term, Forest-wide monitoring program in cooperation with WV DNR and USFWS.	Maintain at least 20,000 acres of mid-late and late successional (>80 years old) spruce forest, with a long-term objective of increasing this to at least 40,000 acres to provide optimum habitat for WVNFS, a MIS.

Table D-2. Disposition of Management Indicator Species from the 1986 Forest Plan

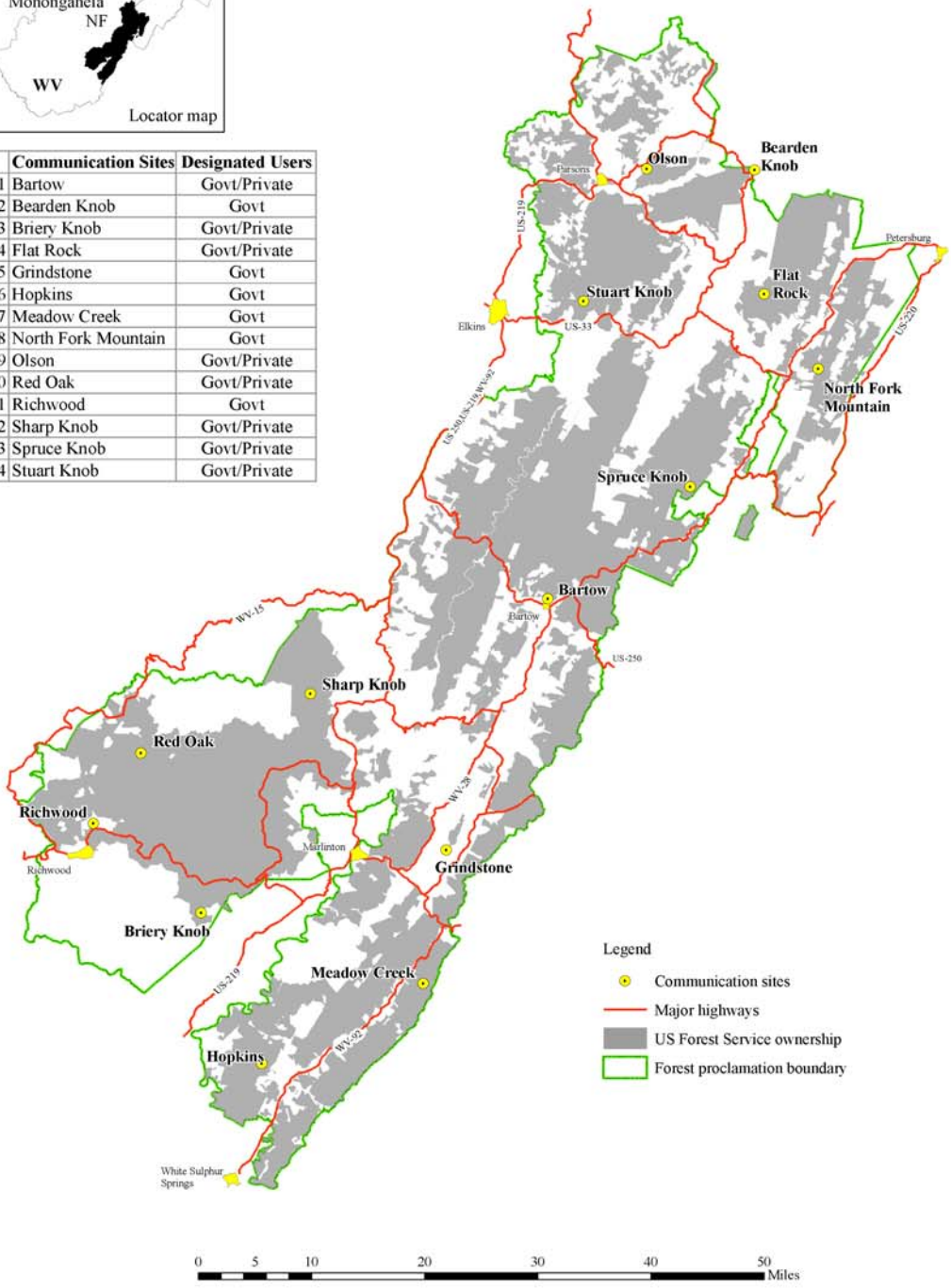
Species	Disposition/Rationale
Virginia big-eared bat (*Corynorhinus townsendii virginianus*)	Not carried forward as an MIS. Habitat generalist; population changes may be difficult to relate to National Forest management activities. Very rare species that is difficult to monitor outside of hibernacula. Will still be included in TES bat monitoring at the project/watershed level.
Indiana bat (*Myotis sodalis*)	Not carried forward as an MIS. Forest habitat generalist; population changes may be difficult to relate to National Forest management activities. Very rare species that is difficult to monitor outside of hibernacula. Will still be included in TES bat monitoring at the project/watershed level.
Cheat Mountain salamander (*Plethodon nettingi*)	Not carried forward as an MIS. Occurs in isolated populations that are protected from management impacts. Potential for effects to populations will still be analyzed at the project level. Effects to high-elevation/spruce forest habitat will be monitored via West Virginia northern flying squirrel.
"Wild" trout	Brook trout carried forward as an MIS in the 2006 Forest Plan.
Black bear (*Ursus americanus*)	Not carried forward as an MIS. Wide-ranging species; difficult to relate population changes to specific National Forest management activities. Effects to this species are analyzed in the EIS. Effects to oak forest habitat will be monitored via wild turkey.
Wild turkey	Carried forward as an MIS in the 2006 Forest Plan.
White-tailed deer *(Odocoileus virginianus)*	Not carried forward as an MIS. Habitat generalist; population changes may be difficult to relate to National Forest management activities. Effects to this species are analyzed in the EIS.
Gray squirrel (*Sciurus carolinensis*)	Not carried forward as an MIS. Effects to oak forest habitat will be monitored via wild turkey.
Varying hare (*Lepus americanus*)	Not carried forward as an MIS. Cryptic species that is difficult to monitor effectively. Effects to high-elevation/spruce forest habitat will be monitored via West Virginia northern flying squirrel.
West Virginia northern flying squirrel	Carried forward as an MIS in the 2006 Forest Plan.

Appendix E

Communication Sites

Appendix E is a map of communication sites currently found on the Forest. The map includes a table that lists the sites and whether the site is designated for use by the government and private entities, or by the federal government only.

	Communication Sites	Designated Users
1	Bartow	Govt/Private
2	Bearden Knob	Govt
3	Briery Knob	Govt/Private
4	Flat Rock	Govt/Private
5	Grindstone	Govt
6	Hopkins	Govt
7	Meadow Creek	Govt
8	North Fork Mountain	Govt
9	Olson	Govt/Private
10	Red Oak	Govt/Private
11	Richwood	Govt
12	Sharp Knob	Govt/Private
13	Spruce Knob	Govt/Private
14	Stuart Knob	Govt/Private



MNF GIS Staff
UTM, Zone 17, NAD 27
July 27, 2006

Forest Service Communication Sites

Original data were compiled from multiple source data and may not meet the U.S.National Map Accuracy Standard of the Office of Management and Budget. This map has no warranties as to its contents or accuracy.

N
W
E
S