United States
Department of
Agriculture

Forest Service
Southern Region

Revised

Land and Resource Management Plan

Jefferson National Forest

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Revised

Land and Resource Management Plan

Jefferson National Forest

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The Jefferson National Forest provides clean water, clean air, abundant wildlife and beautiful landscapes.

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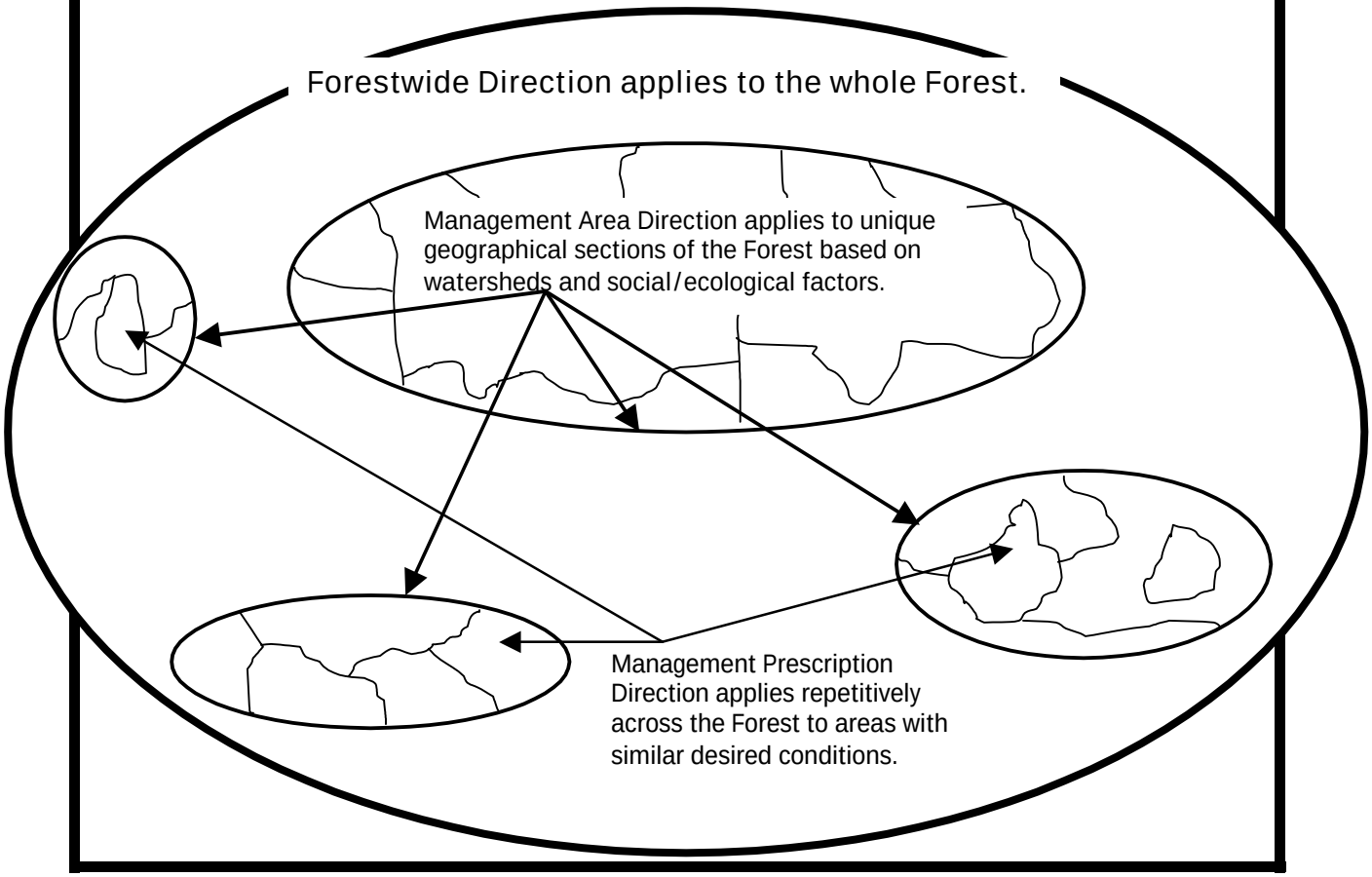
The Jefferson National Forest will restore Southern Yellow Pine open woodlands.

PREFACE

This *Revised Land and Resource Management Plan* (Forest Plan) has been prepared according to Secretary of Agriculture regulations (36 CFR 219) which are based on the Forest and Rangeland Renewable Resources Planning Act (RPA) as amended by the National Forest Management Act of 1976 (NFMA). The Forest Plan has also been developed in accordance with regulations (40 CFR 1500) for implementing the National Environmental Policy Act of 1969 (NEPA). A detailed Environmental Impact Statement has been prepared as required by NFMA (36 CFR 219.10). The Forest Plan represents the selected alternative as identified in the *Final Environmental Impact Statement for the Revised Land and Resource Management Plan* (FEIS).

The document is divided into six major parts: the "Introduction to the Forest Plan," "Forest-Wide Direction," "Management Prescriptions," "Management Areas," "Plan Implementation," "Monitoring and Evaluation," and "Appendices."



The “Introduction to the Forest Plan” Chapter 1 provides background information that places the Management Direction into context with other management directives or procedures and trends occurring on the Forest. The information includes the purpose of a Forest Plan: the decisions made; the relationship of the Forest Plan to other important documents that also provide management direction; a forest description; a summary of the “Analysis of the Management Situation” and a summary of the significant issues.

The “Forest-Wide Direction” Chapter 2 provides management direction that applies to the entire Jefferson National Forest. This direction includes an introduction that explains how this direction was developed and defines goals, objectives and standards. The body of this chapter describes each resource on the Forest followed by the specific goals, objectives and standards related to that resource.

The “Management Prescriptions” Chapter 3 provides about 50 unique land allocations on the Jefferson. Within this section, management prescriptions are defined. Each prescription includes an emphasis, desired condition, objectives (if needed) and standards. In the pocket attached to the back cover of this Plan, you will find maps showing the location of each management prescription.

The “Management Areas” Chapter 3 describes ten unique sections of the Jefferson based on watersheds as well as social and ecological factors. Each management area shows existing conditions, desired conditions, (objectives (if applicable), acreage of each management prescription, and standards (if applicable).

The “Plan Implementation, Monitoring and Evaluation” Chapter 5 includes information on the how the Forest Plan will be implemented and updated through monitoring and evaluation.

The “Appendices” section contains more detailed information that may be helpful in understanding the Forest Plan. They include items such as Monitoring Tasks, Research Needs, and our Old Growth Strategy.

The Jefferson Forest Plan is the result of extraordinary citizen involvement.

INTRODUCTION

CHAPTER 1

PURPOSE OF THE FOREST PLAN

PURPOSE OF THE FOREST PLAN

This Revised National Forest Land and Resource Management Plan (Forest Plan) directs the management of the Jefferson National Forest. The Forest Plan provides direction to assure coordination of multiple-uses (outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness) and sustained yield of products and services [16 USC 1604 (e)]. It fulfills legislative requirements and addresses local, regional, and national issues and concerns. To accomplish this, the Forest Plan:

- Establishes the management direction and associated long-range goals and objectives of the Jefferson National Forest for the next 10-15 years [36 CFR 219.11 (b)] in Chapter 2.
- Establishes management areas, which reflect biological, physical, watershed, and social differences in managing each area of land; and management prescriptions, which reflect different desired conditions and provide the specific information used to develop projects to implement the Forest Plan [36 CFR 219.11 (c)] in Chapters 3 and 4.
- Specifies the standards, which set the sideboards for achieving the goals, objectives and desired conditions, as well as provide meaningful direction when implementing projects [36 CFR 219.13 to 219.27] in Chapters 2, 3 and 4.
- Identifies lands suitable for various multiple uses including timber production [(16 USC 1604(k) and 36 CFR 219.14)] and establishes the Allowable Sale Quantity (ASQ) ensuring a sustained yield of wood products in perpetuity [16 USC 1611 and 36 CFR 219.16] in Chapter 3 and Appendix F.
- Recommends to Congress 3 new stand alone wilderness study areas and 12 additions to existing wilderness to Congress [36 CFR 219.17].
- Establishes the monitoring and evaluation requirements in Chapterr 5 needed to ensure that the direction is carried out and to determine how well outputs and effects were predicted [36 CFR 219.11(d)] in Chapter 3.
- Consents to lease 528,400 acres for Federal oil and gas exploration and development, 195,900 acres with a no surface occupancy stipulation and 140,500 acres with additional stipulations like controlled surface use.

Preparation of the Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act (RPA) as amended by the National Forest Management Act (NFMA). This Forest Plan represents the Selected Alternative out of 7 alternatives evaluated as required by the National Environmental Policy Act (NEPA) and the implementing regulations of NFMA [36 CFR 219]. The Federal Land Policy and Management Act (FLPMA) also guides special uses of the National Forest System.

The NFMA, FLPMA, the Code of Federal Regulations, and other guiding documents determined the content of this Forest Plan. Land allocations, management prescriptions, and standards set forth here constitute the management direction the Forest will follow; however, the projected outputs, services, and rates of implementation are dependant on the annual budget process.

RELATIONSHIP TO THE EIS

SUMMARY OF THE AMS

RELATIONSHIP TO THE ENVIRONMENTAL IMPACT STATEMENT

This Forest Plan represents the selected alternative for managing the land and resources of the Jefferson National Forest. Documentation of this Forest Plan's environmental impacts is contained in the accompanying Environmental Impact Statement (EIS). This Forest Plan is the result of extensive analysis and considerations. The planning process, analysis procedures used, and other alternatives considered in developing this Forest Plan are described or referenced in the EIS.

This Forest Plan provides general, program-level direction for projects and activities on the five ranger districts of the Forest. Activities and projects will be implemented to carry out direction in this Plan. These site-specific projects will be tiered to the accompanying Environmental Impact Statement as provided for in 40 CFR 1502.20. All must meet certain legal requirements discussed in Chapter 5 of this document.

Summary of Analysis of the Management Situation

The Analysis of the Management Situation (AMS) for the National Forests is a determination of the forest's ability to supply goods and services in response to society's demand. The AMS provides a basis for determining the need for change in the existing Forest Plan direction and formulating a broad range of reasonable alternatives. The AMS was completed in August 1996, and a few of the important findings are:

- Land Allocations: Management areas in the 1985 Forest Plan are not designed to represent ecological and social differences across the Forest. Land allocations in the Revision will be clearly linked to physical, biological, and social conditions on the ground. These land allocations need to be applied across the landscape to achieve desired conditions that take into account management practices and intensities. Land allocations need to be coordinated across national forest boundaries.
- Biological Diversity: The 1985 Forest Plan recognized the importance of maintaining biological diversity by providing a variety of habitat components. The Plan called for maximum dispersal of vegetative age classes. The Revision, through more specific land allocations, will focus on the spatial relationship of different habitat components as opposed to the concept of maximum dispersal. Designations of rare communities and other special biological areas are important needs for change to ensure conservation of species, as well as adoption of recovery and conservation plans for threatened, endangered, and sensitive species. The 1985 Plan identified featured species which over-represented game species and early successional wildlife. The Revision will develop an array of management indicator species that represent a broader range of species and habitats.
- Ecosystem Restoration: The Revision will emphasize restoration of damaged ecosystems, natural disturbance regimes, old growth areas, watersheds, and air quality. The Revision needs to consider the effects of wildland fire, prescribed fire, non-native invasive species, native and non-native insects and diseases, and air pollution on forest ecosystem health.
- Wilderness, Wild and Scenic Rivers, and Backcountry Recreation: The Revision needs to consider additional wilderness study recommendations and eligibility of Forest streams for inclusion in the National Wild and Scenic River System. The Revised Plan needs to provide further emphasis and protection for backcountry areas on the Forest that are not recommended for wilderness.
- Scenery: The 1985 Plan was developed using the Visual Management System. The Revision needs to reflect the new Scenery Management System. One of the key

changes in the new system is the increased emphasis on scenery in backcountry areas, as opposed to the focus of the old system only along primary and secondary travelways.

- Mount Rogers National Recreation Area: The 1985 Forest Plan adopted the Mount Rogers NRA Final Management Plan (1980) as a separate management area. The Revision will more fully incorporate the NRA into the Forest Plan in accordance with its special designation and purpose. Special attention needs to be paid to the popular Crest Zone, incorporating the information and desires gathered through the Limits of Acceptable Change process.
- Timber Production: The Revision needs to reevaluate the quantity of timber allowed to be sold on the Forest, considering changes in demand for wood products and compatibility with other resources.
- Oil and Gas Leasing: Since the approval of the Forest Plan in 1985, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 was passed. The Revision needs to decide which lands are available for oil and gas leasing and which lands the Forest Service consents to lease in accordance with this Act.

Summary of Significant Issues

Public involvement is a key part of the planning process. Our goals for public involvement associated with this planning process were: to ensure that all individuals and groups interested in or affected by the management of the Jefferson National Forest have the opportunity to be informed and participate in the revision process; to reach an informed understanding with the public of the varying interests; and to consider these interests in developing this revised plan.

Citizen comments were used to identify what direction management of the forest should take in the future, including what goods and services would be provided and what the environmental conditions should be. Many opportunities were provided for people to get involved in the planning process and to provide comments. Issues submitted by the public, as well as from within the Forest Service, guided the need to change current management strategies.

The first public scoping period for revision of the Jefferson Forest Plan began in June of 1993. Issues were determined from citizen meetings and written comments. The Forest began updating resource inventories. In February of 1994, the Regional Forester of the Southern Region decided to conduct the Southern Appalachian Assessment in order to support the revision of forest plans in the southern Appalachians. Along with the Jefferson National Forest, the Cherokee, Chattahoochee/Oconee, Sumter, and Alabama National Forests issued a new Notice of Intent in the Federal Register in August of 1996. The significant issues developed as a result of this public scooping period are as follows:

1. Terrestrial Plants and Animals and their Associated Habitats. How should the national forest retain/restore a diverse mix of terrestrial plant and animal habitat conditions while meeting public demands for a variety of wildlife values and uses?

2. Threatened, Endangered, and Sensitive/Locally Rare Species. What levels of management are needed to protect and recover the populations of federally listed threatened, endangered, and proposed species? What level of management is needed for Forest Service sensitive and locally rare species?

3. Old Growth. The issue surrounding old growth has several facets, including: 1)

RELATIONSHIP TO THE EIS

how much old growth is desired; 2) where should old growth occur; and 3) how should old growth be managed?

SUMMARY OF SIGNIFICANT ISSUES

4. Riparian Area Management, Water Quality, and Aquatic Habitats. What are the desired riparian ecosystem conditions within national forests, and how will they be identified, maintained, and/or restored? What management direction is needed to help ensure that the hydrologic conditions needed for the beneficial uses of water yielded by and flowing through national forest system lands are attained? What management is needed for the maintenance, enhancement, or restoration of aquatic habitats?

5. Wood Products. The issue surrounding the sustained yield production of wood products from national forest has several facets: 1) what are the appropriate objectives for wood product management; 2) where should removal of products occur, given that this production is part of a set of multiple-use objectives and cost effectiveness; 3) what should be the level of outputs of wood products; and 4) what management activities associated with the production of wood products are appropriate?

6. Aesthetic/Scenery Management. The issue surrounding the management of visual quality has two facets: 1) what are the appropriate landscape character goals for the national forests; and 2) what should be the scenic integrity objectives for the national forests?

7. Recreation Opportunities/Experiences. How should the increasing demand for recreational opportunities and experiences be addressed on the national forests while protecting forest resources? This includes considering a full range of opportunities for developed and dispersed recreation activities (such as nature study, hunting and fishing activities, and trail uses).

8. Roadless Areas/Wilderness Management. Should any of the roadless areas on national forest system lands be recommended for wilderness designation? For any roadless areas not recommended for wilderness, how should they be managed? How should areas recommended for wilderness designation be managed? How should the patterns and intensity of use, fire, and insects and diseases be managed in the existing wilderness areas?

9. Forest Health. What conditions are needed to maintain the ability of the forest to function in a sustainable manner as expected or desired? Of particular concern are the impacts of non-native species and the presence of ecological conditions with a higher level of insect and disease susceptibility.

10. Special Areas and Rare Communities. What special areas should be designated, and how should they be managed? How should rare communities, such as those identified in the Southern Appalachian Assessment, be managed?

11. Wild and Scenic Rivers. Which rivers are suitable for designation into the National Wild and Scenic River System, and how should rivers that are eligible, but not suitable, be managed?

12. Access/Road Management. How do we balance the rights of citizens to access their national forests with our responsibilities to protect and manage the soil and water resources, wildlife populations and habitat, aesthetics, forest health, and desired vegetative conditions?

13. Minerals. How will the mineral resources of the National Forests be managed, considering public demand for a wide variety of minerals? What areas will be made available for the exploration and development of federal leasable minerals and mineral materials?

14. Special Uses. How should the Forest Plan address special uses of the National Forest?

15. Fire Management. How will fire be used in land management activities such as wildlife management, fuels management, silviculture, and ecosystem restoration and maintenance? What measures should be taken to minimize air pollution impacts from prescribed fire?

16. The JNF Effect On Local Communities & People's Effect On JNF. What is the role of the Jefferson in supporting local communities in a changing economic environment? Can a balance be found between commodity-related jobs and tourism-based jobs and the amenity related values important to quality of life? How should the changing demographics, attitudes, and needs of people around the Jefferson National Forest be reflected in a changing mix of goods and services? How will management respond to the changes in population and social structures occurring within and adjacent to the national forest?

17. Subsurface Property Rights. How will subsurface property rights, reserved and outstanding, and mineral leases held by production be taken into consideration when looking at alternative land allocations?

18. Mount Rogers National Recreation Area. Considering the qualities of the area that established its special designation, what mix of goods and services are appropriate on the Mount Rogers NRA ? How should the Crest Zone be managed?

19. Lands - Priorities For Acquisition, Deposition, And Exchange. What are the priorities for land adjustments including acquisition, deposition, and exchange?

20. Air Quality. How will the revised Forest Plan guide monitoring and mitigation of air pollution effects on forest resources and facilitate interaction with the regulatory community? How will Forest management prescriptions (desired conditions, goals, objectives, standards, and possible management practices) incorporate air pollution considerations?

RELATIONSHIP TO OTHER PLANS

Development of a Forest Plan occurs within the framework of the USDA Forest Service regional and national planning. The Forest and Rangeland Renewable Resources Planning Act program sets the national direction and output levels for National Forest System Lands based on suitability and capability information from each Forest Service Region. Each Region disaggregated its share of the national production levels among Forests of the Region. This distribution is based on detailed, site-specific information gathered at the national forest level.

Each Forest Plan either validates or provides a basis for changing production levels assigned by the Region. Activities and projects are planned and carried out by each National Forest based on direction in the Forest Plan.

RELATIONSHIP TO OTHER PLANS

The George Washington and Jefferson National Forests were administratively combined in 1995. However, each National Forest continues to have its own Forest Plan. This Forest Plan only covers the Jefferson National Forest.

STRUCTURE OF THE FOREST PLAN

FOREST INFORMATION

The Jefferson National Forest lies within the Southern Appalachians. In 1996, a Southern Appalachian Assessment was completed. Information from this analysis, which crosses State boundaries and involves multiple national forests including the Jefferson, along with the Cherokee National Forest in Tennessee, the Chattahoochee National Forest in Georgia, a portion of the Sumter National Forest in South Carolina, and a portion of the National Forests of Alabama. The Southern Appalachian Assessment was used by these national forests to facilitate the forest planning process.

STRUCTURE OF THE FOREST PLAN

This Forest Plan is based on a subdivision of the Forest into Management Areas, which are based on watershed, ecological, biological, and socio-economic factors. Each Management Area is allocated to management prescriptions designed to specifically address citizen and management issues and concerns, relative to the capability and suitability of lands for various resource activities. Each management prescription is focused on the desired condition of the land, and provides for multiple uses, resources, services, and values. Each National Forest in the Southern Appalachians has similar management prescriptions adjusted to fit local conditions and issues.

The map accompanying this Forest Plan displays the boundaries of the management areas and the allocation of the management prescriptions. This map was generated using a Geographic Information System accurate to a scale of ¾ inch to one mile, therefore the boundaries displayed on this map can be assumed to vary on the ground up to 500 feet in any direction.

Chapter 2, Forest-wide Direction describes Forest-wide goals, objectives, and standards.

Chapter 3, Management Prescriptions describe desired conditions, objectives, and standards for specific land allocations.

Chapter 4, Management Area Direction displays the distribution of land allocations by geographic areas of the Forest, and describes local conditions, as well as additional objectives and standards.

Chapter 5, Implementation of the Plan contains information on how the Forest Plan will be implemented, details the requirements for monitoring and evaluating the Forest Plan, discusses how amendments or revisions will occur, and displays budget projections.

Appendices contain additional detailed information relating to the Forest Plan.

FOREST INFORMATION

The Jefferson National Forest extends over 200 miles along the Appalachian Mountains of southwestern Virginia, slightly extending into West Virginia and Kentucky. The area includes an approximate total of 723,300 acres, of which almost 19,000 are in Monroe County, West Virginia and almost 1,000 acres are in Letcher County, Kentucky. The Jefferson National Forest contains the Mount Rogers National Recreation Area and four Ranger Districts: Clinch, Glenwood, New Castle, and New River Valley. The Jefferson National Forest was administratively combined with the George Washington National Forest in 1995.

FOREST INFORMATION

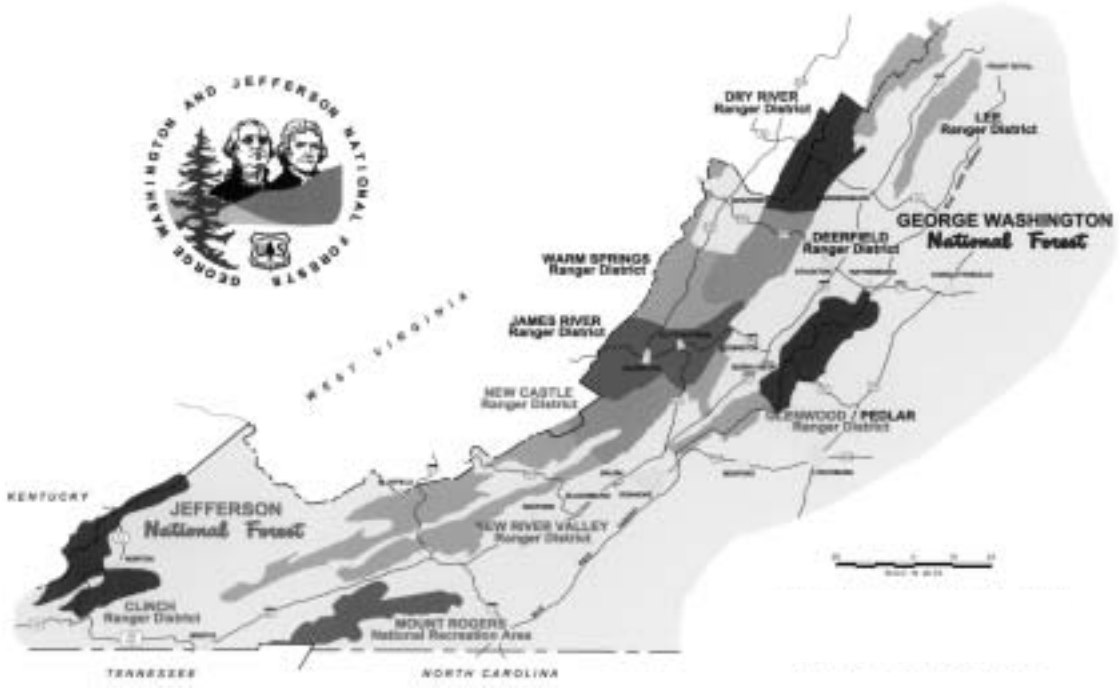
The National Forest is located in the Blue Ridge, Central Ridge and Valley, and Cumberland Plateau physiographic provinces, providing habitat for a wide variety of species including at least 70 amphibian and reptiles, 180 species of birds, 60 species of mammals, and 100 species of freshwater fishes and mussels. Thirty-five of the plants and animals species found on or near the Forest are listed by the US Fish and Wildlife Service as threatened or endangered. The Forest affords excellent opportunities for wildlife viewing, as well as hunting and fishing.

The Jefferson National Forest is a part of the Appalachian Hardwood Forest which is located within the Eastern Deciduous Forest Province. There are over 60 tree species represented on the National Forest. Hardwood-dominated forest types comprise over 70 percent of the acreage. There is much variation in the vegetation and many natural changes are taking place as forest succession progresses.

The Forest is located within seven major river basins -- the James, Roanoke, New (Kanawha), Big Sandy, Holston, Cumberland, and Clinch/Powell (Upper Tennessee) Rivers. The Forest contains 1,053 miles of perennial streams, of which over 500 miles are trout waters. At least 11 communities use water from the Forest for all or part of their water supplies.

The Forest transportation network has nearly 1,202 miles of National Forest System Roads which range from paved highways to non-surfaced roads designed for high clearance vehicles. Many of these roads are available for pleasure driving, the removal of forest products, bicycling and scenic viewing. Interstate 81 and other federal and State highways cross or adjoin the National Forest. The National Forest is also traversed by the Blue Ridge Parkway.

Developed recreation opportunities are offered at over 100 sites on the Forest. The Forest has over 1,100 miles of hiking trails, including about 320 miles of the Appalachian National Scenic Trail and seven National Recreation Trails. The Forest manages 11 Wildernesses totaling approximately 57,800 acres.



The Jefferson National Forest protects or actively restores habitat for all native plants and animals with an emphasis on rare species.

FOREST-WIDE DIRECTION

CHAPTER 2

INTRODUCTION

The Forest Plan is a strategic document providing land allocations, goals, desired conditions, objectives, and standards. This chapter outlines the forest-wide management direction for the Jefferson National Forest within the context of the Southern Appalachians. The Jefferson National Forest is one piece of the Southern Appalachian ecosystem. The goals for management of the Jefferson National Forest are consistent with the other national forests of the Southern Appalachians and consider the conditions and influences of other private and public lands in this region.

This direction is organized around the physical, biological, and social resources of the Forest, as well as the major issues identified by the citizens who helped develop this Forest Plan. Each resource discussion includes broad goal statements, which describe desired conditions we want to maintain, restore or achieve in the future. Objectives express measurable steps we will take over the next ten years on the pathway to achieve our goals. Objectives may be accomplished by maintaining the desired condition or by implementing a project or activity designed to restore or achieve the desired condition. Not all goals require quantifiable objectives. Objectives are linked to the Forest Monitoring Plan.

While goals and objectives define where we are headed with management of the Jefferson National Forest, standards define the rules we will follow in getting there. Standards are specific technical resource management directions and often preclude or impose limitations on management activities or resource uses, generally for environmental protection, public safety, or resolution of an issue.

Specific projects designed to implement this strategic direction are proposed, designed, carried out, and monitored by an interdisciplinary team of resource specialists. Deviation from a standard requires a Forest Plan amendment. Adherence to Forest Plan standards is monitored during project implementation. In addition to the standards found in the Plan, the Jefferson is required to comply with applicable laws, executive orders, and regulations (see Appendix A). Manuals, handbooks, new scientific information, and on-the-ground conditions are followed and considered during site-specific project analysis.

Forest-wide goals, objectives, and standards apply to the entire Jefferson National Forest unless superseded by specific management prescription direction. When a management prescription is silent regarding a specific resource activity, the forest-wide direction applies. Desired conditions, objectives, and standards may also be found at the management prescription (Chapter 3) and management area (Chapter 4) levels of this Plan.

Any decisions on projects to implement the Revised Plan are based on site-specific analysis in compliance with the National Environmental Policy Act (NEPA). This environmental analysis is appropriately documented based on direction in the Council on Environmental Quality *Regulations For Implementing The Procedural Provisions Of The National Environmental Policy Act* (40 CFR Parts 1500-1508) and the *Environmental Policy and Procedures Handbook* (FSH 1909.15). Projects are evaluated to determine if they are consistent with the management direction in the Revised Plan. This evaluation is documented in the project-level environmental document with a finding of consistency incorporated into the decision document.

WATERSHEDS - WATER, SOIL, AIR, AND AQUATIC SPECIES

The lands known today as the Jefferson National Forest could hardly have been called a "forest" in 1936. Repeated wildfires, clearing of steep mountain land for farming and grazing, iron ore mining, and widespread, indiscriminate logging led to severe erosion and increased flooding. As a result, by the early 1900's, much of the higher elevation mountains and ridges in southwestern Virginia had been transformed into charred stumps and brushfields (The Lands Nobody Wanted, Conservation Foundation Report, 1977). In 1911, Congress authorized and directed the Secretary of Agriculture "*to examine, locate, and purchase such forested, cut-over, or denuded lands within the watersheds of navigable streams as in his judgment may be necessary to the regulation of the flow of navigable streams or for the production of timber,"* through the Weeks Law. In 1936, as a result of this Act, the Jefferson National Forest was established from these "lands nobody wanted."

We intend to continue the tradition of watershed restoration, protection and stewardship begun on this national forest over 65 years ago. Maintenance and restoration of healthy, diverse, and resilient watersheds, which include not only the water, but also the soil and air, will be given the highest priority in all of our management activities. Watershed, riparian, and aquatic species protection goals, objectives, desired conditions, and standards do not vary across the Forest. We do not have more or less stringent standards in one area versus another.

[1] Watershed Condition Ranking is explained in Chapter 3 of the FEIS.

Priority Watersheds

Priority watersheds were selected because they either have a below average Watershed Condition Ranking[1] (WCR), impaired stream segments (Table 2-1) or outstanding aquatic

Table 2-1. Priority Watersheds with Below Average WCR or Impaired Rivers or Streams

Watershed Code	Watershed Name	Impaired Rivers / Streams or Below Average WCR
02080203010-H01	James River/Reed Creek	Reed Creek
02080201090-I28	James River/Elk Creek/Cedar Creek	James River
03010101020	Roanoke River/Glade Creek	Below Average WCR
05050001060	New River/Pounds Mill Branch	Below Average WCR
05050001070 05050001070-N09	Cripple Creek	Cripple Creek and Below Average WCR
05050001080	Reed Creek	Below Average WCR
05050001100 05050001100-N17	New River/Peak Creek	Peak Creek and Below Average WCR
05050002030-N31	Hunting Camp Creek	Hunting Camp Creek
05070202050-Q13	Pound River	N. and S. Forks of Pound
06010102020	Middle Fork Holston	Below Average WCR
06010205040 06010205040-P11	Clinch River/Guest River	Crab Orchard, Yellow, Tom & Little Tom, and Sepulcher Creeks, Guest River and Below Average WCR
06010205050	Lower Clinch River	Below Average WCR
06010206010	Powell River	Below Average WCR

biodiversity (Table 2-2) in close proximity to the Jefferson National Forest, where forest management actions may make a difference. Although water quality continues to improve on National Forest System lands, downstream from the Forest, several rivers and streams are identified by the Commonwealth of Virginia as impaired. Physical, chemical and biological considerations determine whether waters are listed as impaired. Fecal coliform, sediment or other water quality conditions caused by past or current activities contribute to impairment. The sources of impairment and frequently the rare aquatic species in these watersheds actually occur outside of national forest ownership. These watersheds will be priorities for watershed assessments, including additional inventory and monitoring beyond what is required in this Forest Plan and project-specific plans.

Table 2-2. Priority Watersheds which Possess Outstanding Aquatic Biodiversity

Watershed Code	Watershed Name	Rare Aquatic Species
02080201030-I10	Upper Potts Creek	James spinymussel
02080201080-I19	Upper Craig Creek	Orangefin Madtom
02080201080-I21	Johns Creek	Orangefin madtom, Atlantic pigtoe mussel, and James spinymussel
02080201080-I22	Lower Craig Creek/Patterson Creek/Lower Barbours Creek	Orangefin madtom, Atlantic pigtoe mussel, and James spinymussel
02080201090-I27	James River/Jennings Creek	James spinymussel
02080201090-I28	James River/Elk Creek/Cedar Creek	Atlantic pigtoe mussel and James spinymussel
05050002030-N30	Wolf Creek	Elktoe and Tennessee heelsplitter mussels, and candy darter
06010205040-P09	Clinch River/Little Stony Creek	Tippecanoe darter, emerald and steelcolor shiners, and many species of mussels
06010205050-P13	Clinch River/Stock Creek/Cove Creek	Tippecanoe darter, emerald and steelcolor shiners, paddlefish, and many species of mussels
05050002010-N28	Stony Creek	Candy darter
05050002020-N26	Kimberling Creek	Candy darter and green floater
05050001050-N03	Fox Creek	Kanawha minnow
06010101010-O10	North Fork Holston River/Laurel Creek	Tennessee dace
06010101010-O09	Upper North Fork Holston River	Tennessee dace, longhead darter, little-wing pearlymussel, slippershell, and slabside pearlymussel
06010102010-O02	South Fork Holston River/ Whitetop Laurel Creek	Tennessee dace, sharphead and greenfin darters, little-wing pearlymussel and slabside pearlymussel
06010102020-O03	Upper Middle Fork Holston River	Tennessee dace, Tennessee heelsplitter
06010102020-O04	Middle Fork Holston River/Hungry Mother Creek	Tennessee dace, tan riffleshell, Tennessee heelsplitter, cracking, little-wing pearlymussel, and slabside pearlymussel

WATERSHEDS

Within these watersheds, we will seek opportunities for dialog with adjacent private landowners and work collaboratively with local governments and other Federal government agencies to restore water quality or maintain and restore aquatic habitat. In addition to identification of these priority watersheds, the Forest has developed a Federally Listed Fish and Mussel Conservation Plan in collaboration with the U.S. Fish and Wildlife Service, and continues to work with the Virginia Department of Game and Inland Fisheries to protect and recover federally listed and sensitive aquatic species.

Priority Watershed activities will include: 1) public education and awareness; 2) new partnerships and coordinating efforts; 3) information collection through monitoring and research; 4) establishment of plans and priorities; 5) funding and technical assistance; 6) implementation of solutions; and 7) evaluation of results.

Reference Watersheds

Watershed assessments are predicated on our ability to define, measure, and compare the relative physical, chemical, and biological integrity between similar systems. Relatively undisturbed watersheds, or reference watersheds, form the basis for developing integrity criteria. The Jefferson National Forest has identified eight reference watersheds representing each of the ecological sub-sections of the Forest. The streams within these small (300-2400 acres) watersheds have existing water quality conditions considered to be the "best attainable" for the ecological sub-section under relatively undisturbed, natural situations. Management prescription 9A2 in Chapter 3 contains the desired condition and standards for these reference watersheds.

Aquatic Species

The Jefferson National Forest has approximately 300 miles of streams which support a cold-water fishery and about 230 miles of streams that support a cool- or warm-water fishery. In addition, the Forest has about 350 acres of lakes, ponds, and reservoirs greater than one acre. Aquatic macroinvertebrates integrate the physical, chemical, and biological components of the riparian ecosystem and will be used as biological indicators of change and impacts to aquatic ecosystems.

The aquatic threatened and endangered species list on the Jefferson National Forest includes 24 species, as well as two species that are candidates for federal listing. All but 4 of these species are found downstream of National Forest System (NFS) lands. Forest Plan objectives have been developed for federally-listed species located in drainages immediately adjacent to NFS ownership: blackside dace, Cumberland johnny darter, dromedary pearlymussel, little-wing pearlymussel, all found in the Poor Fork Cumberland watershed. Although the James spinymussel was confirmed at one location on the Jefferson in 1990, no live specimens have been found in subsequent surveys.

Instream Flows

Nonconsumptive water uses are those that do not consume or remove water from a waterbody. These include instream flows for streams and water levels in lakes and reservoirs. Instream flows are necessary to fulfill the purposes for which the Jefferson National Forest was created and to meet the intent of applicable laws and regulations. These purposes include favorable conditions of water flow, fish and wildlife, recreation, and aesthetics.

Instream flows are also needed in adequate quantities to support the beneficial uses designated by the State. Commonly listed beneficial uses (known as designated uses in some States) for nonconsumptive purposes include recreation, fish and wildlife, and aquatic life. Specifically, Virginia's Water Quality Standards state "...man-made alterations in stream flow shall not contravene designated uses including protection of the

propagation and growth of aquatic life."

Soils

Soils are complex mixtures of minerals, organic compounds, and living organisms. Time, climate, macro- and micro-organisms, vegetation and topography modify the parent materials present in the surface geology of an area to slowly develop the soil system. The Jefferson National Forest works in cooperation with the Natural Resources Conservation Service to keep our detailed soil inventory up-to-date. Soil productivity is sustained through nitrogen and carbon fixation, mineral release from weathering parent material, decaying organic matter, and translocation of nutrients. Erosion and compaction can affect long- and short-term soil productivity. Soil productivity improvement opportunities include abandoned mining areas, new land acquisitions, eroding roads and trails, impacted riparian areas, and watershed restoration areas.

Air Quality

Air pollution is having negative effects on the watersheds of the Jefferson National Forest. Sulfur compounds in the atmosphere are primarily responsible for the haze that obscures visibility. Sulfur compounds and sometimes nitrogen compounds cause acidification of headwater streams and can cause nutrients to leach out of soils. Ozone causes visible injury to plant leaves, and can also cause reduced plant growth. Because the pollutants originate from many sources over a wide geographic area, regional approaches to air pollution emission reductions are necessary to improve air quality and resource conditions. It is essential that the Forest work cooperatively with air management agencies, Visibility Improvement State and Tribal Association of the Southeast (VISTAS), and other regional planning organizations in order to reduce air pollution impacts to resources on the Forest. Air quality is also addressed (directly or indirectly) in this Forest Plan under aquatic species, wilderness, forest health, and fire management.

GOALS AND OBJECTIVES

GOAL 1 Manage watersheds to maintain or restore resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support beneficial water uses. Instream flows (or lake levels) provide the amounts necessary to: 1) maintain the capacity of the channels to transport water and sediment; 2) protect aquatic organisms; 3) sustain or restore riparian habitats and communities; and 4) provide for recreation, scenic, aesthetic, and research purposes.

OBJECTIVE 1.01 Maintain or restore temperature, balance of water and sediment, chemical resilience, and biological integrity of all streams. (see also Objective 3.01).

OBJECTIVE 1.02 Conduct watershed analysis annually as funding permits. Priority is given to watersheds listed in Tables 2-1 and 2-2. As part of the analysis, surveys will be conducted to identify sources of impairment from National Forests lands and appropriate treatments will be developed.

WATERSHEDS

OBJECTIVE 1.03 The instream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values will be determined on selected streams as identified by the Forest.

GOAL 2 Manage and restore riparian ecosystems, wetlands and aquatic systems to protect and maintain their soil, water, vegetation, fish, wildlife, and other resources. Channeled ephemeral streams maintain their ability to filter sediment from upslope disturbances while achieving the goals of the adjacent management prescription area.

OBJECTIVE 2.01 Streamsides are managed in a manner that restores and maintains amounts of Large Woody Debris (LWD) sufficient to maintain habitat diversity for aquatic and riparian-dependent species (approximately 200 pieces[1] per stream mile).

GOAL 3 Aquatic habitat conditions are suitable to maintain aquatic species native to the planning area, and to support desirable levels of selected species (e.g., species with special habitat needs, species commonly fished, or species of special interest).

OBJECTIVE 3.01 Watersheds are managed in a manner that results in sedimentation rates that stabilize or improve the biological condition category of the stream as monitored using aquatic macroinvertebrates.

OBJECTIVE 3.02 Maintain a stable and/or increasing population trend for Blackside dace and James River spiny mussel.

GOAL 4 Manage soils to maintain or improve their productivity and to not contribute sediment to streams at levels which negatively effect instream uses and lifecycles of aquatic species.

OBJECTIVE 4.01 Improve watershed and soil conditions across 600 acres per decade. Priority for treatment will be given to watersheds listed in Tables 2-1 and 2-2 and areas identified in the Watershed Improvement Needs inventory.

GOAL 5 Reduce air pollution impacts to forest ecosystems and watersheds.

OBJECTIVE 5.01 The condition of forest resources potentially affected by air pollution improves in watersheds currently being negatively impacted.

[1] A piece of LWD is defined as a piece of wood at least partially within the bank full channel width, with a diameter of at least 4 inches (10 cm), and length of at least 4 feet.

STANDARDS

Water and Soil Quality

FW-1: Resource management activities that may affect soil and/or water quality follow Virginia, West Virginia, and Kentucky Best Management Practices, State Erosion Control Handbooks, and standards in this Forest Plan.

FW-2: Locate all facilities (e.g. trails, trail shelters, restrooms, designated campsites, etc.) in a manner that minimizes the possibility of contamination of water sources. Educate users on "leave no trace" camping practices, including sanitation practices that minimize the potential for contamination of water sources.

FW-3: Prior to authorizing or re-authorizing new or existing diversions of water from streams or lakes, determine the instream flow or lake level needs sufficient to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values.

FW-4: Water is not diverted from streams (perennial or intermittent) or lakes when an instream flow needs or water level assessment indicates the diversion would adversely affect protection of stream processes, aquatic and riparian habitats and communities, or recreation and aesthetic values.

FW-5: On all soils dedicated to growing vegetation, the organic layers, topsoil and root mat will be left in place over at least 85% of the activity area[2] and revegetation is accomplished within 5 years.

FW-6: Locate and design management activities to avoid, minimize, or mitigate potential erosion.

FW-7: Use ditchlines and culverts when new permanent road construction grades are more than 6% and the road will be managed as open for public use.

FW-8: To limit soil compaction, no heavy equipment is used on plastic soils when the water table is within 12 inches of the surface, or when soil moisture exceeds the plastic limit. Soil moisture exceeds the plastic limit when soil can be rolled to pencil size without breaking or crumbling.

FW-9: Heavy equipment is operated so that soil indentations, ruts, or furrows are aligned on the contour and the slope of such indentations is 5 percent or less.

FW-10: Management activities that cause bare mineral soil on slopes greater than 5% will have erosion control planned and implemented.

[2] Activity area is the area of potential soil disturbance expected to produce vegetation in the future, for example: timber harvest units, prescribed burn areas, grazing allotment, etc.

Air Quality

Standards for air quality related to wildland fire and prescribed fire are found in the Fire Management section of Chapter 2.

FW-11: Conduct all National Forest management activities (including permitted activities) in a manner that does not result in a significant contribution to: (1) a violation of National Ambient Air Quality Standards; or (2) a violation of applicable provisions in the State Implementation Plan.

Riparian Areas and Corridors

Riparian areas and corridors are managed according to Management Prescription 11 in Chapter 3. See Appendix C for the definitions of riparian areas and corridors.

WATERSHEDS

Channeled Ephemeral Zones

The following standards apply to 25 feet on each side of a channeled ephemeral stream and 25 feet upstream for the point at which the scoured channel begins (the "nick point").

FW-12: Motorized vehicles are restricted in the channeled ephemeral zone to designated crossings. Motorized vehicles may only be allowed on a case-by-case basis, after site-specific analysis, in the channeled ephemeral zone outside of designated crossings.

FW-13: Management activities expose no more than 10% mineral soil in the channeled ephemeral zone.

FW-14: Up to 50% of the basal area may be removed down to a minimum basal area of 50 square feet per acre. Removal of additional basal area is allowed on a case-by-case basis when needed to benefit riparian-dependent resources.

FW-15: Permitted firewood cutting within the channeled ephemeral zone must take into consideration large woody debris needs. Ranger Districts will identify areas where firewood cutting is not permitted due to large woody debris concerns.

FW-16: At least partial suspension is required when yarding logs over channeled ephemerals.

FW-17: The removal of large woody debris is allowed if it poses a risk to water quality, degrades habitat for aquatic or riparian wildlife species, impedes water recreation (e.g. rafting), or when it poses a threat to private property or Forest Service infrastructure (e.g. bridges). The need for removal is determined on a case-by-case basis.

FW-18: The addition of large woody debris in channeled ephemeral reaches will primary be through passive recruitment rather than active placement.

FW-19: New human-constructed impoundments are allowed on a case-by-case basis, following evaluation of downstream instream flow needs.

FW-20: When crossing channeled ephemeral streams, culverts, temporary bridges, hardened fords, or corduroy are used where needed to protect channel or bank stability.

FW-21: Construction of crossings is completed on all channeled ephemerals as soon as possible after work has started on the crossing. Permanent and temporary roads on either side of crossings within the channeled ephemeral zone are graveled.

FW-22: If culverts are removed, banks and channel must be restored to a natural size and shape. All disturbed soil must be stabilized.

FW-23: Trails, campsites, and other recreational developments are located, constructed, and maintained to minimize impacts to channel banks and to prevent other resource damage. When existing facilities are causing unacceptable resource damage, appropriate mitigation measures will be implemented. Soils are stabilized on eroding trails and recreational sites.

FW-24: New non-motorized trail construction is allowed to improve existing trail configuration and improve access.

FW-25: New motorized trails are prohibited within the channeled ephemeral zone except at designated crossings or where the trail location requires some encroachment; for example, to accommodate steep terrain.

FW-26: Motorized and non-motorized trail reconstruction and relocation within the channeled ephemeral zone are allowed to reduce impacts to riparian and aquatic resources.

FW-27: Where grazing is currently allowed and under a permit, control and mitigate to restore, enhance, or maintain the integrity of channels and banks. Grazing permit reauthorization is allowed, provided progress towards mitigation of negative impacts on the channeled ephemeral zones has occurred. New grazing permits will be designed to prevent negative impacts to the channeled ephemeral zone. Livestock will be excluded from channeled ephemeral zones whenever the zone cannot be maintained or restored otherwise.

FW-28: Feeding troughs and salt and mineral blocks are not allowed inside the channeled ephemeral zone. Watering troughs are appropriately located to protect the streams.

FW-29: During prescribed fire operations in the channeled ephemeral zone, use the least ground disturbing method of fireline construction, favoring blacklines and handtools.

FW-30: Do not disk, blade, or plow fireline within the ephemeral stream channels, use them as natural firebreaks. (This applies to the actual stream channel, not the entire 25 foot zone.)

FW-31: Revegetate and waterbar firelines as quickly as possible, where necessary to prevent erosion. Use water diversions to keep sediment out of channels.

Aquatic Species Management

See Riparian Corridor Management Prescription 11 in Chapter 3 for aquatic species management direction.

WILDLIFE AND THREATENED, ENDANGERED AND SENSITIVE SPECIES

WILDLIFE AND THREATENED, ENDANGERED, AND SENSITIVE SPECIES HABITAT

The Jefferson National Forest is charged with creating and maintaining habitat conditions suitable to maintain viable populations of all species native to the planning area, and where appropriate support desirable levels of selected species. As described in Chapter 3, mixes of management prescriptions are allocated to provide for a variety of habitat conditions. The goals, objectives and standards in this section are designed to protect, restore, maintain, and enhance wildlife and plant populations and communities while maintaining flexibility to manage other resources.

Some species depend on early successional forests, while others depend on late successional forests. Similarly, some species depend on a forest structure that is more open while other species depend on a more closed canopy forest. Generally speaking, the forests that are more open with an early successional component have a more frequent disturbance regime while those with more of a late successional component and more of a closed canopy overstory have a disturbance regime that is more infrequent and at a smaller spatial scale. It is important that we provide this range of habitat conditions across the landscapes of the national forest. Early and late successional forests are generally reciprocal—more early successional forests mean less late successional forest, and vice versa—if they are both to be maintained long-term on the landscape.

Most early successional forest conditions are temporary. Ten years after a natural or managed disturbance, forests mature into saplings and poles. At approximately 40 years of age, forests are considered mid successional, with late successional habitat conditions appearing at 70 to 120 years of age depending on the forest community type.

Examples of forest communities that can provide these open, early successional conditions are the xeric pine, pine-oak woodlands, and dry oak forests. These typically occur on hot, dry south to west facing slopes and ridge crests. Forest communities with more closed, late successional conditions are mesic oak forests and mixed cove forests. These are typically found on cool, moist north to east facing slopes, coves, and riparian areas.

Some forest communities can provide both early successional forest conditions and mid- to late successional conditions at the same time. Open pine, xeric pine-oak savannahs and xeric open oak woodlands provide elements of both in the same forest and are generally found on west, southwest, and southern facing slopes of ridges.

Recent research using dendrochronology and fire scar dating indicates a fire-return interval of approximately 7 to 12 years in the drier pine and oak woodlands at least from the 1700s until the 1930s, when active fire-suppression became widespread and the norm in forest management. Fire-return intervals at this rate would create a more open mid to late successional forest, with fewer trees per acre and a more grassy/shrubby understory than is currently seen today. This open oak-pine, savannah-like, woodland is now largely missing from the landscape due to fire suppression and subsequent forest succession that has favored shade tolerant and fire intolerant species to now dominate. Restoring and maintaining open forest woodland that is now in decline provides important habitat conditions for supporting federally listed threatened and endangered species such as Indiana bat and other high priority species in need of conservation attention such as Appalachian yellow-bellied sapsucker and golden-winged warbler. In addition, restoration of disturbance management will favor restoration of table mountain and pitch pine plant communities, both now in steep decline across their natural range.

Permanent grass/forb and seedling/sapling/shrub habitats are also important elements of early successional habitats. Wildlife openings are permanent openings maintained for

wildlife habitat on an annual or semi-annual basis with the use of mowing, burning, livestock grazing, herbicides and/or cultivation. Old fields are openings that are maintained on a less frequent basis (5-10 year intervals). Pastures and maintained rights-of-way can also provide a type of permanent early successional habitat.

This Forest Plan is designed to strike a balance across the entire range of habitat conditions. Objectives for percent of the forest desired in early, mid, and late successional conditions are included in individual management prescriptions. The early successional objectives apply only to temporary early successional forest patches 2 acres in size or greater. Permanent grass/forb and seedling/sapling/shrub habitats, old fields, pastures, maintained rights-of-way, open woodland habitats, and canopy gaps less than 2 acres in size provide a different habitat condition and are considered separately. With the exception of canopy gaps, presence of these other types is meant to supplement early successional forest objectives in determining overall abundance of early-successional habitats across the Forest. Percentage objectives apply to all forested land, not just acreage suitable for timber production or harvest. Conditions of surrounding private lands are not included in objectives, but are considered during project-level planning. For example, high amounts of quality early successional forest on surrounding private land might result in a decision to provide such habitat on national forest land at the low end of the objective range.

The Forest will work with neighboring landowners to encourage maintenance of forest as a land use on private lands within and surrounding the Forest through agreements, land trusts, and education. Acquisition and exchange of adjacent lands are considered where they would contribute to the contiguous landscape needs, particularly for rare species. The Forest will also contribute to public knowledge and understanding of biological conservation issues, strategies, and activities.

Early successional forest patches created by natural disturbances are also considered during project-level planning, but no attempt has been or need be made to predict amounts of early successional forest likely to be created by natural events in the future. Even-aged regeneration cutting, including two-aged or coppice with reserves, counts as early successional forest habitat. Areas managed under uneven-aged regeneration cutting are designed to provide canopy gaps present in mid or late successional forest and therefore do not contribute to early successional habitat objectives.

Open road density for a contiguous management prescription block is calculated by converting the acres within the allocation into square miles (total acres/640 acres) and then dividing that figure into the linear measure of open roads within the prescription. Open roads forming the boundary of a contiguous management prescription block contribute half of their length to open road density calculations. An open road is a motorized travelway (including designated motorized trails) used on a regular basis.

Calculations to determine forest plan compliance for percent of early or late successional habitats, as well as road density, during project planning will be done on the basis of geographically contiguous management prescription blocks. Management prescription blocks of less than 1,000 contiguous acres can be lumped with nearby prescriptions having the same successional stage objectives. To meet objectives for mid and late successional forest habitats, it is important that planned vegetation management treatments (timber harvesting or prescribed burning) do not fall below the minimum objective levels prescribed in individual management prescriptions.

WILDLIFE AND THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Management Indicator Species

Management Indicator Species (MIS) have been chosen to represent: threatened and endangered species; species with special habitat needs; species commonly hunted, fished, or trapped (demand species); non-game species of special interest; and species that indicate effects to major biological communities. Specific habitat objectives related to these species are located in several places throughout this Forest Plan. Table 2-3 provides a guide for locating these objectives. The monitoring program outlined in Chapter 5 contains specific objectives for these management indicator species.

Threatened, Endangered, Sensitive Species (T/E/S)

The Forest contains, or may influence, habitat that supports 35 federally listed (4 mammals, 1 bird, 5 vascular plants, 6 fish, and 19 mussels), over 100 Regional Forester's sensitive, and numerous locally rare plant and animal species. For federally listed species, the Forest coordinates closely with the U.S. Fish and Wildlife Service to avoid negative effects and to assist with recovery. Sensitive species are those with range-wide viability concerns that are designated by the Regional Forester, with the goal of not having them become federally listed. Locally rare species are those species determined at the Forest level due to concerns about losing representation of that species on the Forest, even though they are secure range-wide. All the lists change with time as species are added or deleted.

Objectives for recovery of eight federally listed species that are known to exist on the Jefferson National Forest are provided in this section and under the Watersheds - Water, Soil, Air, and Aquatic Species section of this Chapter.

Table 2-3. Management Indicator Species

Species Common Name	Category (s)	Related Objectives or Management Prescription (Rx) or Desired Condition (DC)
Peaks of Otter Salamander	T/E/S Indicator, Special Interest Species Indicator	9.03, 12.03, Rx 8E2 Desired Condition (DC)
Pileated Woodpecker	Special Habitat Indicator	12.03, 13.01, Rx 8A1-OBJ2, Rx 8B-OBJ2, Rx 8C-OBJ2, Rx 8E1-OBJ2
Ovenbird	Special Habitat Indicator	7.01, 12.03, 13.01
Chestnut-sided Warbler	Special Habitat Indicator	7.02, Rx 4K3-OBJ1, and Rx 4K4-OBJ1
Acadian Flycatcher	Special Habitat Indicator	2.01, Rx 11 DC
Hooded Warbler	Biological Community Indicator	7.01., 12.03, 12.05, 18.03, Rx 8A1-OBJ1, Rx 8A1-OBJ2, Rx 8B-OBJ2, Rx 8C-OBJ1, Rx 8C-OBJ2
Scarlet Tanager	Biological Community Indicator	7.01, 12.02, 12.05, 18.02, 18.03, Rx 8A1-OBJ1, Rx 8C-OBJ1
Pine Warbler	Biological Community Indicator	12.02, 12.05, 18.02, 18.03
Eastern Towhee	Biological Community Indicator	12.02, 12.05, 18.02, 18.03, Rx 8A1-OBJ3, Rx 8B-OBJ1, Rx 8C-OBJ1, Rx 8C-OBJ3, Rx 8E1-OBJ1, Rx 8E1-OBJ3
Wild Trout	Biological Community Indicator, Demand Species Indicator	1.01, 1.03, 2.01, 3.01, 5.01, Rx 11 DC
Eastern Wild Turkey	Demand Species Indicator	12.02, 12.03, 12.05, 18.02, 18.03, Rx 8A1 DC
Black Bear	Demand Species Indicator	8.01, 12.02, 12.03, 12.05, 18.02, 18.03, Rx 8C DC
Deer	Demand Species Indicator	12.02, 12.03, 12.05, 18.02, 18.03, Rx 8B DC

GOALS AND OBJECTIVES

GOAL 6 Maintain and restore natural communities in amounts, arrangements, and conditions capable of supporting native and desired non-native species within the planning area. Provide quality wildlife-based recreational opportunities to the public, including hunting, fishing, and wildlife viewing.

See Objectives for Riparian ecosystems (Goal 2), Aquatic habitats (Goal 3), Vegetation Goal 12), Old Growth (Goal 13), and Fire (Goal 18) related to this Goal.

GOAL 7 Provide breeding, wintering, migration, staging and stop-over habitat for migratory birds in ways that contribute to their long-term conservation.

OBJECTIVE 7.01 Implement 400-600 acres of habitat improvement treatments per year to increase structural diversity for migratory birds in mid to late successional mixed mesophytic, northern hardwood, mesic oak forests, or xeric oak and oak-pine woodlands. (See also Objectives 12.02, 12.03, 12.05, 18.02, and 18.03.)

OBJECTIVE 7.02 Maintain and restore approximately 2,500 acres above 2800 feet elevation in early successional habitats to provide habitat for high-elevation, early successional migratory bird species over the planning period. (See also Objectives 4K3-OBJ1, and 4K4-OBJ1.)

GOAL 8 Maintain or increase habitats for those species needing large, contiguous forested landscapes, especially where such conditions are not found on other lands within the landscape.

OBJECTIVE 8.01 To provide areas with low levels of human disturbance, maintain approximately 252,000 acres under conditions where open road density is less than 0.8 miles per square mile, and off-road vehicle use is restricted throughout the year. Maintain at least 2,400 of these acres in early successional habitat. (See Management Prescription 8C.)

GOAL 9 Contribute to the conservation and recovery of federally listed threatened and endangered species, and contribute to avoiding federal listing of other species under the Endangered Species Act.

OBJECTIVE 9.01 Maintain a stable and/or increasing population trend for the **northern flying squirrel** through protection, maintenance and restoration of high elevation spruce-fir and northern hardwood forest communities. (See Management Prescriptions 4K3 and 4K4.)

WILDLIFE AND THREATENED, ENDANGERED, AND SENSITIVE SPECIES

OBJECTIVE 9.02 Maintain a stable and/or increasing population trend for the **Indiana bat** through protection and proactive management of Cave Protection Areas. (See Management Prescription 8E4.)

OBJECTIVE 9.03 Maintain a stable and/or increasing population trend for the **Peaks of Otter salamander** over the planning period through protection and maintenance of the Habitat Conservation Area. (See Management Prescription 8E2.)

OBJECTIVE 9.04 Maintain the current number of populations/occurrences of **northeastern bulrush**, **Virginia spirea** and **small-whorled pogonia** through protection and maintenance of existing sites. (See Management Prescriptions 4D and 9F.)

OBJECTIVE 9.05 Increase the number of populations/occurrences of **Virginia round-leaf birch** with the assistance of reintroduction and propagation efforts. (See Management Prescription 4D.)

STANDARDS:

Wildlife Management

FW-32: Retain soft mast producing species (dogwood, black gum, hawthorne, grapes, serviceberry, etc.) during vegetation management treatments when consistent with overall regeneration and species composition objectives.

FW-33: Potential black bear den trees will be retained during all vegetation management treatments. Potential den trees are those that are greater than 20” diameter breast height. Potential den trees also include those that are hollow with broken tops or those with limbs greater than 12 inches diameter broken near the bole of the tree.

T/E/S Species Management

FW-34: Maintain records of locations and conditions of federally listed threatened and endangered species, and of Regional Forester’s sensitive species within the planning area.

FW-35: Control non-native invasive species where they are causing negative effects to threatened, endangered, or sensitive species. Do not intentionally introduce non-native species that are known or suspected of causing negative effects to federally listed threatened and endangered species in or near sites supporting these species.

FW-36: Do not issue permits for collection of threatened, endangered, sensitive, and locally rare species, except for approved scientific purposes.

Bald Eagle Management

FW-37: Delineate and maintain 1,500 foot protection zones around all bald eagle nest and communal roost sites until they are determined no longer suitable. Management activities that modify the forest canopy within this zone are designed to be compatible with recovery of this species.

Peregrine Falcon Management

FW-38: Post and enforce seasonal closure orders near active peregrine falcon nests during season of use to control human disturbance.

Northern Flying Squirrel Management

FW-39: Northern hardwood forests within ½ mile of known occupancy of northern flying squirrels are not modified by management actions unless compatible with recovery of this species.

FW-40: Known occurrences of the northern flying squirrel are allocated to Management Prescriptions 4K3 and 4K4 to ensure protection and maintenance of their current populations and surrounding habitat conditions. (See Chapter 3 for these Management Prescriptions for additional management direction related to the northern flying squirrel.)

Management of Federally-listed Plants

FW-41: Known occurrences of Virginia spirea, small-whorled pogonia, northeastern bulrush, and Virginia round-leaf birch are allocated to Management Prescriptions 4D or 9F to ensure protection and maintenance of their current populations and surrounding habitat conditions.

FW-42: Continue cooperative efforts to contribute to the recovery of Peters Mountain mallow where it occurs on non-Forest Service lands.

Peaks of Otter Salamander Management

FW-43: Known occurrences of the Peaks of Otter salamander are allocated to Management Prescription 8E2 to ensure protection and maintenance of current populations and surrounding habitat conditions. (See Chapter 3 for this Management Prescription for desired condition and standards for protection of the Peaks of Otter salamander.)

Gray Bat and Virginia Big-Eared Bat Management

FW-44: Maintain a ¼ mile buffer of undisturbed forest around gray bat maternity and hibernation colony sites and Virginia big-eared bat maternity, bachelor, or winter colony sites. Prohibited activities within this buffer include cutting of overstory vegetation, construction of roads, trails, or wildlife openings, and prescribed burning. Exceptions may be made when compatible with recovery of these species.

WILDLIFE AND THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Indiana Bat Management

FW-45: Each Indiana bat hibernaculum has a **primary and secondary cave protection** area managed according to management prescription 8E4. If additional hibernacula are found, the desired condition and standards of management prescription 8E4 apply until an environmental analysis to consider amendment to the Forest Plan is completed.

FW-46: In order to promote **potential summer roost trees and maternity sites** for the Indiana bat throughout the Forest, planned silvicultural practices in hardwood-dominated forest types will leave all shagbark hickory trees greater than 6 inches d.b.h.[3] and larger, except when they pose a safety hazard. In addition:

- Clearcut openings 10 to 25 acres in size will also retain a minimum average of 6 snags or cavity trees per acre, 9 inches d.b.h. or larger, scattered or clumped.
- Group selection openings and clearcuts less than 10 acres in size have no provision for retention of a minimum number of snags, cavity trees, or residual basal area due the small opening size and safety concerns.
- All other harvesting methods (and clearcut openings 26-40 acres in size) will retain a minimum residual 15 square feet of basal area per acre (including 6 snags or cavity trees) scattered or clumped. Residual trees are greater than 6 inches d.b.h. with priority given to the largest available trees, which exhibit characteristics favored as roost trees by Indiana bats.

FW-47: To insure a continuous supply of **roost trees and foraging habitat**, the following forest-wide conditions must be maintained:

- Minimum of 60% of the combined acreage of all CISC[4] Forest Types on the Forest will be maintained over 70 years of age; AND
- Minimum of 40% of the combined acreage of all CISC Forest Types 53 (white oak, red oak, hickory) and 56 (yellow poplar, white oak, red oak) will be maintained at an age greater than 80 years old.

FW-48: When **active roost trees** are identified on the Forest, they will be protected with a ¼ mile buffer surrounding them. This protective buffer remains until such time the trees and associated area no longer serve as a roost (e.g., loss of exfoliating bark or cavities, blown down, or decay).

FW-49: No disturbance that will result in the potential taking[5] of an Indiana bat will occur within this active roost tree buffer.

- Commercial timber harvesting, road construction, and use of the insecticide diflubenzuron are prohibited.
- Prescribed burning, timber cutting, road maintenance, and integrated pest management using biological or species-specific controls during non-roosting season are allowed, following project level analysis to determine the direct, indirect, and cumulative effects on Indiana bats and the hibernacula.
- Other activities within this buffer are allowed following determination that

[3] d.b.h. Diameter Breast Height. See Glossary in Appendix B for definition.

[4] CISC Continuous Inventory of Stand Conditions. See Glossary in Appendix B for definition.

[5] The term "take" is defined by the Endangered Species Act and US Fish and Wildlife Service as any act which adversely affects a listed species including killing, harassing, harming, pursuing, hunting, capturing, or collecting. "Harm," in turn, may include significant habitat modification or degradation where it actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

they will not result in a potential taking of an Indiana bat.

FW-50: Removal of known Indiana bat **active roost trees** will be avoided, except as specified in the next 2 standards.

FW-51: If during project implementation, **active roost trees** are identified, all project activity will cease within a ¼ mile buffer around the roost tree until consultation with U.S. Fish and Wildlife Service is completed to determine whether project activities can resume.

FW-52: In the event that it becomes absolutely necessary to remove a known Indiana bat **active roost tree**, such a removal will be conducted during the time period when the bats are likely to be in hibernation (November 15 through March 31), through informal consultation with the U.S. Fish and Wildlife Service. Trees identified as immediate threats to public safety may be removed when bats are not hibernating; however, informal consultation with U.S. Fish and Wildlife Service is still required. Examples of immediate threats to public safety include trees leaning over a trail, public road or powerline that could fall at any time due to decay or damage.

FW-53: Prescribed burning is allowed to maintain **flight and foraging corridors** in upland and riparian areas potentially used by bats in the summer. To avoid injury to non-flying young Indiana bats, prescribed burning of active maternity roosting sites between June 1 and August 1 is prohibited.

FW-54: Opportunities should be sought to include creation of drinking water sources for bats in project plans, where appropriate, in areas where no reliable sources of drinking water are available. Opportunities will be considered when the creation is not detrimental to other wetland-dependent species (I. e., damage to natural springs and seeps).

FW-55: If **active maternity roost sites** are identified on the Forest, they will be protected with a 2-mile buffer defined by the maternity roost, alternate roost sites, and adjacent foraging areas.

FW-56: No disturbance that will result in the potential taking of an Indiana bat will occur within this active maternity roost site buffer.

- Commercial timber harvesting, road construction, and use of all pesticides is prohibited.
- All other activities within this buffer will be evaluated during project level analysis to determine the direct, indirect, and cumulative effects on Indiana bats, through informal consultation with the U.S. Fish and Wildlife Service.

FW-57: If during project implementation, **active maternity roost sites** are identified, all project activity will cease within a 2-mile buffer around the maternity roost until consultation with U.S. Fish and Wildlife Service is completed to determine whether project activities can resume.

FW-58: Monitoring of timber sales and other activities will be implemented as follows:

- Timber sale administrators or biologists will conduct and report normal inspections of all timber sales to ensure that measures to protect the Indiana bat have been implemented. Timber sale administrators will conduct normal inspections of all timber sales to administer provisions for protecting residual trees not designated for cutting under provisions of the timber sale contract. Unnecessary damage to residual trees will be documented in sale inspection reports and proper contractual or legal remedies will be taken. The Forest will include this information in their annual monitoring reports and made available to the U.S. Fish and Wildlife Service, if requested.

WILDLIFE THREATENED, ENDANGERED, AND SENSITIVE SPECIES

- Informal consultations among the U.S. Fish and Wildlife Service and the Forest will occur as needed in order to review and determine any need to modify provisions of the biological opinion, and other issues regarding the Indiana bat.

FW-59: Where appropriate, training should be conducted for employees regarding bats in the National Forests. Training should include sections on bat identification, biology, habitat requirements, and sampling techniques.

FW-60: Develop informational and educational displays about bats to inform the public about this misunderstood group of mammals.

RARE COMMUNITIES

RARE COMMUNITIES

Rare communities are assemblages of plants and animals that occupy a small portion of the landscape, but contribute significantly to plant and animal diversity. They generally are characterized by relatively discrete boundaries and are small in area. Rare communities are frequently associated with areas of unusual geology or hydrology. Because of their importance to biological diversity and the small area affected, maintenance and restoration of these areas, as well as inventory and monitoring are a high priority. Acquisition of lands containing sites critical to the conservation of rare communities is a priority.

Table 2-4. Rare Communities Found On The Jefferson National Forest

Rare Community Names	
A. Wetland Communities	**D. Cliffs and Rock Outcrops**
1. Bogs, Fens, and Seeps	1. Talus Slopes
2. Limesink, Karst, and Depression Ponds	2. Forested Boulderfields
3. Riverine Vegetation	3. Acid Cliffs
	4. Alkaline Cliffs
B. Glades, Barrens, and Associated Woodlands	5. Spray Cliffs
1. Calcareous Woodlands and Glades	6. Northern White Cedar Bluffs
2. Carbonate Glades and Barrens	7. Rock Houses
3. Sandstone Glades and Barrens	8. Granitic Domes
4. Shale Glades and Barrens	9. Granitic Flatrock
5. Serpentine Woodlands	
6. Mafic Glades and Barrens	**E. Other Communities**
	1. Grassy Balds
C. Forest Communities	2. Shrub Balds
1. Carolina Hemlock Forests	3. Rocky Summits
2. Table Mountain Pine Woodlands	4. Patch Prairies and Grasslands
3. Spruce-Fir Forests	5. Canebrakes
4. Beech Gap Forests	6. Caves
5. Basic Mesic Forests	

Rare communities have been identified on the Jefferson National Forest through a series of inventories completed in cooperation between the Forest Service and Virginia Natural Heritage Program. Several reports have resulted from this cooperative work which describe the communities, elements of occurrence within them, and management recommendations. We will continue to work closely with the Virginia Natural Heritage Program to identify and protect newly discovered rare communities.

Ideal stewardship of these of rare communities would allow natural processes to proceed unencumbered, however, in some cases, the prevailing environmental conditions have changed so as to prevent ,or at least hinder, natural processes. Reintroduction of fire and control of non-native diseases, insects, plants, and other competitors require special management strategies. Rare communities are managed under the 9F (Rare Community) Management Prescription. Appendix E contains detailed descriptions of these rare communities.

Significant Caves

The Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301-4309) is intended to protect significant caves on federal lands by identifying their location, regulating their use, requiring permits for removal of their resources, and prohibiting destructive acts. The Act requires that caves be considered in the preparation and implementation of land management plans, and allows for cave location to be kept confidential. The Jefferson National Forest has designated 4 caves as significant: Shire's and Miller's Cove Caves on the New Castle Ranger District and Kelly and Rocky Hollow Caves on the Clinch Ranger District. Criteria for evaluating additional caves as significant are described in Appendix H.

GOALS AND OBJECTIVES:

GOAL 10 Maintain and restore rare communities found on Jefferson National Forest lands.

Objectives related to this goal are found under the Vegetation and Fire sections of this Chapter.

GOAL 11 Protect and manage significant and potentially significant caves in accordance with the Federal Cave Resources Protection Act of 1988, which protects their location.

OBJECTIVE 11.01 Evaluate 10 Forest caves over the planning period using the rating system in Appendix H of the Revised Plan. Use the assigned significance values to determine cave classification and to determine cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1988.

STANDARDS

Rare Communities

FW-61: In cooperation with the States' Natural Heritage agencies, make appropriate adjustments to Management Prescription 9F through the Forest Plan amendment process as new rare community information becomes available.

FW-62: Maintain records of rare community locations and conditions across the

RARE COMMUNITIES

forest. Survey project areas for rare communities prior to implementing projects that have the potential to negatively affect them.

VEGETATION, OLD GROWTH, AND FOREST HEALTH

Caves

FW-63: A minimum of 200 foot buffers are maintained around cave entrances, sinkholes, and cave collapse areas known to open into a cave's drainage system. There are no soil-disturbing activities or harvest of trees within this buffer. Wider buffers are identified through site-specific analysis when necessary to protect caves from potential subterranean and surface impacts. Perennial, intermittent, channeled ephemeral stream standards will apply beyond the first 200 feet.

FW-64: The use of caves for disposal sites or the alteration of cave entrances is prohibited except for the construction of cave gates or similar structures to ensure closure.

FW-65: Management activities within any area draining into a cave are limited if they may affect the cave ecosystem through sedimentation, soil sterilization, the addition of nutrients or other chemicals (including pesticides and fertilizers), or if they change the cave's natural hydrology or micro-climate.

FW-66: Post and enforce seasonal closure orders around entrances of caves and abandoned mines occupied by significant populations of bats, to reduce the frequency and degree of human intrusion. Prohibit camping and campfires at the entrance to caves, mines, and rock shelters used by bats.

FW-67: If such closure orders are found to be ineffective, construct and maintain gates or other structures that allow for entrance and egress by bats. If necessary to further discourage human disturbance to caves occupied by significant populations of bats, close non-essential public access routes controlled by the Forest Service within ¼ mile of cave entrances during periods of use by bats.

FW-68: Human access to caves for educational and recreation use may be allowed during periods when bats are not present. If damage to a cave occurs as a result of such use, close the cave. Allow human access (i.e. scientific study) on a case-by-case basis when bats are present.

FW-69: The specific location of a **significant cave** cannot be made available to the public unless it is determined that disclosure of this information would not create a substantial risk of harm, theft, or destruction of the cave.

VEGETATION, OLD GROWTH AND FOREST HEALTH

Major forest communities occupy the vast majority of the Jefferson National Forest landscape. Their distribution, abundance, and condition are critical elements of providing for a diversity of plant and animal communities; however, because they are widespread, they necessarily will be managed in a variety of ways across the landscape, depending on the management prescription in which each is located.

Table 2-5 shows the major forest community types that exist on the Jefferson National Forest. Each major forest community type is described by its relationship with the Southern Region Forest Types along with the code assigned to these Forest Types in the Continuous Inventory of Stand Conditions (CISC) database.

Fire has historically played an important role in shaping the species composition of some forest communities on the Jefferson National Forest. Judicious use of fire is needed to halt the decline of the Table Mountain pine and other southern yellow pine and upland oak forest communities across the Southern Appalachians. Without fire or other vegetation

management actions that approximate fire effects, many communities may decline dramatically in future years and shift towards shade-tolerant and fire-intolerant species. This forest health issue is addressed not only in this section of forest-wide direction, but also in the Rare Community section, Fire Management section, and the Timber Management section. Other aspects of forest health are also addressed in the Watershed and Wildlife sections.

Old Growth

In June 1997, the Region 8 Old Growth Team published *Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region*. Descriptions of the old growth forest communities found in this report reflect the major community types shown in Table 2-5. Ideal stewardship of old growth communities would allow natural processes to proceed unencumbered, however, in some cases, the prevailing environmental conditions have changed so as to prevent ,or at least hinder, natural processes. Reintroduction of fire and control of non-native diseases, insects, plants, and other competitors require special management strategies. Old growth communities are managed under the 6A, 6B, and 6C Management Prescriptions based on the dependence or association of the forest community to fire. Appendix D contains more detail related to our long-term old growth strategy.

Old growth forests are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically

Table 2-5. Relationship between Major Forest Community Types and Forest Types from CISC on the JNF

Community Type	Forest Type	Acres
Northern Hardwood Forest	Sugar maple-Beech-Yellow birch (CISC 81)	16,800
Montane Spruce-Fir Forest	Fraser fir (CISC 6), Red spruce-Fraser fir (CISC 7), Red spruce-Northern hardwood (CISC 17)	4,100
Mixed Mesophytic Forest	Cove hardwood-White pine-Hemlock (CISC 41), Yellow poplar (CISC 50), Yellow poplar-White oak-Red oak (CISC 56), Black walnut (CISC 82).	84,000
Conifer-Northern Hardwood Forest	White pine (CISC 3), White pine-Hemlock (CISC 4), Hemlock (CISC 5), Hemlock-Hardwood (CISC 8), White pine-Cove hardwood (CISC 9), White pine-Upland hardwoods (CISC 10).	21,300
Dry-Mesic Oak Forest	Post oak-Black oak (CISC 51), White oak-Red oak-Hickory (CISC 53), White oak (CISC 54), Northern red oak-Hickory (CISC 55).	269,100
Dry and Dry-Mesic Oak-Pine Forest	Upland hardwoods-Yellow pine (CISC 42), Oaks-Eastern red cedar (CISC 43), Southern red oak-Yellow pine (CISC 44), Chestnut oak-Scarlet oak-Yellow pine (CISC 45), Bottomland hardwoods-Yellow pine (CISC 46), White oak-Black oak-Yellow pine (CISC 47), Northern red oak-Hickory-Yellow pine (CISC 48).	146,700
Dry and Xeric Oak Forest, Woodland, and Savanna	Chestnut oak (CISC 52), Scrub oaks (CISC 57), Scarlet oak (CISC 59), Chestnut oak-Scarlet oak (CISC 60).	120,300
Xeric Pine and Pine-Oak Forest and Woodland	Eastern redcedar-Hardwoods (CISC 11), Shortleaf pine-oaks (CISC 12), Pitch pine-oaks (CISC 15), Virginia pine-oaks (CISC 16), Table Mountain pine-Hardwoods (CISC 20), Longleaf pine (CISC 21), Virginia pine (CISC 33), Pitch pine (CISC 38), Table Mountain pine (CISC 39), Eastern red cedar (CISC 35), Black locust (CISC 88).	41,500
Eastern Riverfront and River Floodplain Hardwood Forests	Sweetgum-Yellow poplar (CISC 58), River birch-Sycamore (CISC 72), Cottonwood (CISC 73), Sugarberry-American elm-Green ash (CISC 63), Beech-Magnolia (CISC 69), Willow (CISC 74), Sycamore-Pecan-American elm (CISC 75).	300

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differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large woody material, number of canopy layers, species composition and ecosystem function. Additional existing old growth patches identified during project-level decision-making and monitoring may be reallocated to Management Prescription 6A, 6B, or 6C if the patch contributes to the desired condition of the management prescription in which it is found or contributes to the forest-wide distribution and abundance of that particular old growth community type.

Forest Health

The high percentage of forest communities aged 80-110 years old pose significant challenges in addressing forest health issues. These large areas of uniformly aged forests are particularly vulnerable to both native and non-native forest pest epidemics. Integrated Pest Management (IPM) principles are used during site-specific analysis. IPM is a decision-making and action process, which includes biological, economic, and environmental evaluation of host-pest systems to manage pest populations. IPM strategies involve a comprehensive systems approach to silvicultural, wildlife, fuel treatment, recreation and corridor management practices that emphasizes *prevention* of pest problems.

Insect and disease organisms are a significant component of forest ecosystems. Native organisms contribute to many ecological processes of forests including nutrient cycling, plant succession, and forest dynamics. In most cases, these native organisms are recognized as an integral component of forest health. In a few instances, however, these organisms cause unacceptable resource damage or loss, and negatively affect ecological, economic, or social values. In these cases, the organisms causing the damage are referred to as pests. Significant native insect pests on the Jefferson National Forest include the southern pine beetle and a variety of defoliators. Significant native disease problems include oak decline, shoe-string root rot, and a variety of other decay organisms affecting living trees.

Throughout the past 100 years, a variety of insects, diseases, and plant species have been introduced to the United States and spread into the Jefferson National Forest. These non-native organisms are always considered pests because they often have no natural enemies or other naturally controlling agent and their unchecked spread can wreak untold damage to native ecosystems and forest communities. The chestnut blight has reduced the American chestnut from the predominate tree species on the Jefferson to a minor understory component of today's forests. Other significant non-native pests include the gypsy moth, the hemlock wooly adelgid, beech bark disease, balsam wooly adelgid, butternut canker, and dogwood anthracnose.

The montane spruce-fir forest community is confined to the highest peaks of Virginia, Tennessee, and North Carolina. These communities are threatened across their range by infestations of balsam wooly adelgids. The stresses induced by insect attack are exacerbated by additional stresses of acid precipitation and high recreation pressure. Spruce-fir communities support several rare terrestrial wildlife species including an endangered subspecies of northern flying squirrel and Weller's salamander. Restoration centers on increasing stand structural complexity and enhancing the stocking of red spruce through the release of spruce saplings from the understory of northern hardwoods, planting seedlings in open areas, and promoting natural reforestation of open areas. The Forest will cooperate in efforts to minimize adverse effects of acid precipitation and balsam wooly adelgid on spruce-fir communities and develop cooperative relationships with private landowners to maintain or establish habitat corridors between patches of spruce-fir habitat.

Air pollution

Forests and streams located in areas of base-poor bedrock (sandstone and granite) and with elevations above 3,000 feet are being negatively affected by historic and current levels of acid deposition. This is especially true for spruce-fir forests. The two primary acidifying compounds are sulfates and nitrates. Of those two, nitrate deposition is most important in spruce-fir forests. The sources of acidifying compounds are generally located off national forest lands, with coal-fired electric generation facilities and vehicles accounting for the bulk of sulfur and nitrogen emissions. When nitrogen is deposited in excess of forest nutrient needs, some nitrate will leave the soil and take with it essential nutrients. When nutrients are leached from soils, growth of vegetation can be reduced. Sulfur deposition can cause the same effects on soils when the capacity to absorb sulfur is exceeded. Sulfur and nitrogen compounds in the soil also cause acidification of high elevation streams, thereby endangering the habitat of native brook trout and other aquatic species. Recent and projected trends in air pollutants show sulfur compound emissions decreasing over the life of the Plan, whereas nitrogen compound emissions are projected to remain relatively flat.

Ozone pollution is negatively affecting the health of sensitive forest tree species, black cherry for example. Ozone is formed through chemical reactions in the atmosphere between nitrogen oxide (from vehicles and coal-fired power generation) and volatile organic compounds (from industrial and natural sources) in the presence of sunlight. Ozone levels are highest during the summer. Recent studies suggest that competitiveness between tree species is changing over time due to elevated ozone levels. Tree species that are not sensitive to ozone will out-compete more sensitive species over time. Significant reductions in ozone pollution over the life of the Plan are not anticipated because nitrogen oxide emissions are not expected to decrease significantly.

Non-Native Invasive Plants

Non-native invasive plants currently causing problems on the Jefferson National Forest include ailanthus (tree of heaven), kudzu, multiflora rose, and purple loosestrife. Some native plant species, commonly referred to as weeds, can also cause forest health problems. Wild mustard is an example of a native problem weed pest on the Jefferson National Forest. The Forest will contribute, whenever possible, to research aimed at suppression of hemlock wooly adelgid, balsam wooly adelgid, beech bark disease, dogwood anthracnose and other introduced significant non-native invasive pest problems.

Category 1 Species are non-native plant species that are known to be invasive and persistent throughout all or most of their range within the Southern Region. They can spread into and persist in native plant communities and displace native plant species, therefore posing a demonstrable threat to the integrity of the natural plant communities in the Region. Category 2 Species are non-native plant species that are suspected to be invasive or are known to be invasive in limited areas of the Southern Region. Category 2 Species will typically persist in the environment for long periods once established and may become invasive under favorable conditions. Plant species in Category 2 pose a significant risk to the integrity of natural plant communities throughout the Region or in parts of the Region. The Forest will strive to minimize negative effects of non-native invasive species and control such species where feasible and necessary to protect national forest resources.

VEGETATION, OLD GROWTH, AND FOREST HEALTH

GOALS AND OBJECTIVES:

GOAL 12 Manage forest ecosystems to maintain or restore composition (mix of species), structure (age class distribution), and function (resulting benefits to the ecosystem and humans) within desired ranges of variability.

OBJECTIVE 12.01 Maintain approximately 21,000 acres of Montane Spruce-Fir and Northern Hardwood Forest communities, sustaining 75% in mid- to late-successional condition and at least 50% in late-successional condition by the end of the planning period. Develop, implement, and test methods for restoring spruce-fir forests to historically occupied areas. (See Management Prescription 4K3 for specific restoration objectives for these communities).

OBJECTIVE 12.02 Restore 1,300 acres of open woodland and grassland complexes within the **Xeric Pine and Pine-Oak Forest and Woodland** community on the Jefferson National Forest over the planning period, including 700 acres of **Table Mountain pine**. Maintain 41,500 acres of Xeric Pine and Pine-Oak Forest and Woodland community, sustaining 10-12% in an early/late successional woodland condition by the end of the planning period.

OBJECTIVE 12.03 Maintain 84,000 acres of **Mixed Mesophytic Forest** communities, sustaining 75% in a mid- to late-successional condition and at least 50% in a late-successional condition by the end of the planning period.

OBJECTIVE 12.04 Establish one American chestnut research and restoration site across the forest in partnership with the American Chestnut Cooperators Foundation and the American Chestnut Foundation over the planning period.

OBJECTIVE 12.05 Maintain existing **Dry-Mesic Oak, Dry and Dry-Mesic Oak-Pine, Dry and Xeric Oak Forest** communities through a combination of timber harvest, prescribed burning, and wildland fire use across 28,000 acres per decade.

GOAL 13 Provide a well-distributed and representative network of large, medium, and small old growth patches managed through restoration, protection, or maintenance activities to provide biological and social benefits. (Refer to Appendix D, Old Growth Strategy).

OBJECTIVE 13.01 Provide the following acres of each community type in an old growth or late-successional condition by the end of the decade:

Community Type	Acres	Community Type	Acres
Northern Hardwood	8,400	Dry and Xeric Oak	12,000
Conifer-Northern Hardwood	2,200	Xeric Pine and Pine-Oak	3,400
Dry and Dry-Mesic Oak-Pine	14,700	Mixed Mesophytic	8,500
Riverfront and Floodplain Hardwood	150	Montane Spruce-fir	2,100
Dry-Mesic Oak	27,000		

GOAL 14 Contribute to maintenance or restoration of native tree species whose role in forest ecosystems is threatened by insects and disease. Management activities will reduce the impacts from non-native invasive species.

OBJECTIVE 14.01 Gypsy moth suppression priorities are:

- Where threatened, endangered, proposed, or sensitive species or their habitats may be negatively impacted by the gypsy moth;
- Rare communities likely to be severely affected by gypsy moth if no action is taken;
- Developed recreation areas and other concentrated use areas;
- Areas of high site productivity to maintain stump sprouting capability for oak regeneration in the short-term; resulting in long-term maintenance of hard mast production and forest diversity;
- Scenic byways and viewsheds; and
- Old growth forest communities.

OBJECTIVE 14.02 Priorities for reducing or eliminating potential losses from Southern pine beetle are:

- Where threatened, endangered, proposed, or sensitive species or their habitats may be negatively impacted by the Southern pine beetle;
- Rare communities likely to be severely affected by Southern pine beetle if no action is taken;
- Where legally required due to spread onto adjacent landownerships;
- Developed recreation areas and other concentrated use areas;
- Scenic byways and viewsheds; and
- In pine stands adjacent to Wilderness, where spot spread from Wilderness is possible.

VEGETATION, OLD GROWTH, AND FOREST HEALTH

STANDARDS

Vegetation

FW-70: Structural diversity may be increased through pre-commercial thinning, commercial thinning, uneven-aged management, creating canopy gaps and openings 0.25 to 2 acres in size using non-commercial cut and leave treatments, or a combination of these treatments when compatible with the desired condition and standards of the appropriate management prescription. Due to practical considerations, these treatments typically occur on slopes less than 30%, although there is no restriction on steeper slopes if feasible. Even-aged stand regeneration treatments, where desired, may occur later in the life of these stands.

FW-71: When regenerating forest stands, regenerate to native tree species that commonly occur naturally on similar sites within that land type association.

FW-72: To the extent practical, control threats from insects and disease in montane spruce-fir forests.

FW-73: Design all silvicultural treatments in montane spruce-fir forests to maintain or restore the forest type. Silvicultural treatments will not be used for the purpose of creating early successional habitat or for conversion to other forest types.

FW-74: During silvicultural treatments in all forest types, patches of live Eastern hemlock greater than ¼ acre are retained.

FW-75: In order to maintain future restoration opportunities, do not cut live Carolina hemlock. Exceptions may be made to provide for public safety, protection of private resources, insect and disease control, or research.

FW-76: During silvicultural treatments, retain all live butternut with more than 50% live branches. Record the approximate location of these trees and notify the Forest Silviculturist.

Old Growth

FW-77: Inventory stands for existing old growth conditions during project planning using the criteria in Appendix D. Consider the contribution of identified patches to the distribution and abundance of the old growth community type and to the desired condition of the appropriate prescription during project analysis. For purposes of project planning, the following forest types are considered well-represented in the current inventory of existing old growth for the Jefferson National Forest: Dry and Xeric Oak Forest Woodland and Savanna; Dry and Dry-Mesic Oak-Pine Forest, and may by cut through resource management activities.

FW-78: Following project analysis, make appropriate adjustments to Management Prescription 6A, 6B, or 6C, depending on community type, through the Forest Plan amendment process.

Gypsy Moth

FW-79: Integrated Pest Management is used to protect resources from damage caused by the gypsy moth.

FW-80: Slow the Spread actions are allowed to slow the gypsy moth's rate of spread from the areas where it is established.

FW-81: Suppression actions are allowed to reduce damage caused by outbreaks where gypsy moths are established as identified by the entomologists with

the Forest Health Protection Unit of the Forest Service. Suppression treatments available for use in gypsy moth suppression include, but are not limited to, the bacterial insecticide *Bacillus thuringiensis* var. *kurstaki*, the chemical insect growth regulator diflubenzuron, and the gypsy moth specific biological insecticide *Gypchek*.

FW-82: Eradication actions are allowed to eliminate isolated infestations of gypsy moth that are newly detected.

FW-83: The development, improvement, or experimental testing of natural enemies to both high population treatment tactics (insecticide application) and low population treatment tactics (mating disruption, sterile insect release fungal application, insecticide application, and mass trapping) may be considered in all forest areas except Wilderness, areas under study for possible wilderness inclusion and where indicated in specific management prescriptions.

Southern pine beetle

FW-84: Integrated Pest Management is used to prevent or control damage caused by the southern pine beetle.

FW-85: Use hazard rating models and silvicultural treatments to reduce risk of southern pine beetle infestation in pine forests.

Non-native Invasive Plant Species

FW-86: The use of Category 1 Species is prohibited.

FW-87: The establishment or encouragement of Category 2 Species is prohibited in areas where ecological conditions would favor invasiveness and is discouraged elsewhere. Projects that use Category 2 Species should document why no other (non-invasive) species will serve the purpose and need.

FW-88: Favor use of native grasses and wildflowers beneficial as wildlife foods when seeding temporary roads, skid roads, log landings and other temporary openings when slopes are less than 5%. On slopes greater than 5%, favor use of vegetation that best controls erosion.

Pesticides

FW-89: Application is supervised by a certified pesticide applicator. Workers who apply pesticides are trained to ensure minimum impacts and maximum effectiveness. Only those methods that assure proper application of pesticides are used.

Insecticides

FW-90: Insecticides known to have negative impacts on aquatic ecosystems are not aerially applied within 200 feet, nor ground applied within 30 horizontal feet of perennial streams, wetlands, or open bodies of water.

FW-91: A notice of intent to aerially apply insecticides or other aerially applied intervention tactics (e.g. pheromone flakes) is posted on signs prior to treatment. Signs are placed along roads and trails at major entry points to the treatment area. For wilderness areas, the notice of intent is placed outside the wilderness area at major trailheads. Wilderness areas have signs in place at least one week prior to treatment. Signs inform visitors of the type of intervention tactic and the time span in which application may occur, thus allowing visitors the option of minimizing or avoiding exposure to the treatment.

VEGETATION, OLD GROWTH, AND FOREST HEALTH

FW-92: Treatment of developed recreation areas such as picnic areas and campgrounds or dispersed areas of high concentrated use are scheduled during low-use periods, or the areas are temporarily closed in order to minimize human exposure to the treatment. Signs are posted in these areas at least 24 hours before treatment begins. Signs provide information on scheduled treatment dates and type of treatment.

FW-93: Treatment of dispersed recreation areas accessible by trails have signs posted at all major points of entry. Signs are in place at least 24 hours before treatment begins. The signs provide information on date and type of treatment in order to allow visitors to minimize or avoid exposure.

Herbicides

FW-94: Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment. Application methods from most to least selective are:

- Cut surface treatments;
- Basal stem treatments;
- Directed foliar treatments;
- Soil spot (spot around) treatments;
- Soil spot (spot grid) treatments;
- Manual granular treatments;
- Manual/mechanical broadcast treatments;
- Helicopter treatments.

Table 2-6. Classification of chemical/method combinations when used at typical rates and exposures

Application Method		Class			
		A	B	C	D
Manual ground:					
Cut surface	Dicamba Glyphosate Imazpyr	Picloram Triclopyr Amine	2, 4-D Amine		
Basal stem	Diesel Kerosene Limonene	Triclopyr Ester 2, 4-DP	2, 4-D Ester		
Soil Spot	Hexazionone				
Foliar Spray	Fosamine Glyphosate Hexazionone Imazpyr Kerosene	Limonene Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester	2, 4-D Amine 2, 4-D Ester 2, 4-DP	Tebuthiuron	
Mechanical ground	Diesel Dicamba Fosamine Glyphosate Hexazionone Imazpyr	Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester 2, 4-DP	2, 4-D Amine 2, 4-D Ester Tebuthiuron		
Aerial	Diesel Fosamine Glyphosate Hexazionone Imazpyr Kerosene	Limonene Picloram Sulfometuron Methyl Triclopyr Amine Triclopyr Ester 2, 4-DP	2, 4-D Amine 2, 4-D Ester Tebuthiuron		

FW-95: Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment. No class B, C, or D chemical (See Table 2-6) may be used on any project without the approval of the Regional Forester. Vegetable oil is used as the herbicide carrier when available and compatible with the proposed application.

FW-96: Areas do not undergo prescribed burning for at least 30 days after herbicide treatment.

FW-97: Aerial application with herbicides is allowed only in utility corridors. Each aerial herbicide application must have an operations plan to ensure that:

- Adequate precautions are taken to protect the crew, including equipment certification and hazard identification;
- Areas to be aerially treated are clearly marked; and
- Methods used to avoid buffers and other sensitive areas are safe and effective.

FW-98: No herbicide is aerially applied within 200 horizontal feet of an open road or designated trail. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

FW-99: No herbicide is aerially applied within 300 feet, nor ground-applied within 60 feet, of any known threatened, endangered, proposed, or sensitive plant, except where its use is necessary to control non-native invasive species affecting federally listed or sensitive species. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

FW-100: No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled pesticides) may occur within these buffers only to prevent significant environmental damage such as non-native invasive plant infestations. Buffers are clearly marked before treatment, so applicators can easily see and avoid them.

FW-101: With the exception of utility corridor and road rights-of-way, no herbicide is broadcast within 100 feet of private land or 300 feet of a private residence, unless agreed to by the landowner. Buffers are clearly marked so applicators can easily see and avoid them.

FW-102: No soil-active herbicide is applied within 30 feet of the drip line of reserved vegetation (e.g. den trees of hardwood inclusions) or within 30 feet of the drip line of vegetation adjacent to the treated area.

FW-103: Aquifers and public water sources are identified and protected.

FW-104: Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers.

FW-105: Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, riparian corridors, open water or wells, or other sensitive areas.

FW-106: No herbicide is broadcast on rock outcrops or sinkholes. No soil-active herbicide with a half-life longer than 3 months is broadcast on slopes over 45%, erodible soils, or aquifer recharge zones. Such areas are clearly marked before treatment so applicators can easily see and avoid them.

Table 2-7. Unacceptable Weather Conditions For Herbicide Application

	Temps Higher Than	Humidity Less Than	Wind (at Target) Greater Than
Ground:			
Hand (cut surface)	N.A.	N.A.	N.A.
Hand (other)	98F	20%	15 mph
Mechanical (liquid)	95F	30%	10 mph
Mechanical (granular)	N.A.	N.A.	10 mph
Aerial: Granular	N.A.	N.A.	8 mph

FW-107: Weather is monitored and the project is suspended if temperature, humidity, or wind becomes unfavorable as shown in Table 2-7.

FW-108: Nozzles that produce large droplets (mean droplet size of 50 microns or larger) of streams of herbicide are used. Nozzles that produce fine droplets are used only for hand treatment where distance from nozzle to target does not exceed 8 feet.

Salvage

FW-109: The maximum size of openings allowed for harvesting timber as a result of fire, wind, ice, snow, and insect attacks will be determined on a case-by-case basis.

FW-110: There are no dispersion requirements for salvage treatment areas.

TIMBER MANAGEMENT

The management philosophy of the timber management program on lands identified as suitable for timber production includes a planned periodic harvest applying biological and scientific principles to influence tree-species composition, control stocking, ensure adequate reforestation, facilitate harvesting of trees and protect the productivity of the site while providing for a healthy vigorous forest within the growth capabilities of the sites.

Trees and the products derived from them are a highly valued forest resource, carefully managed in a cost-effective manner through a coordinated timber program where multiple-use objectives are realized. Forest product outputs contribute to the social and economic well-being of the people living in the area. Forest products vary from high quality veneer for furniture and flooring to small diameter pulp logs used in the production of paper.

Because this Forest Plan is focused on achieving ecological, biological, and aesthetic desired conditions, lands suitable for timber production are focused on those areas where a sustainable timber harvest program is a cost-efficient method of achieving these desired conditions and multiple-use objectives. For instance, to maintain a mix of successional habitats or a desired species composition, lands suitable for timber production are distributed fairly evenly between sites capable of producing high quality sawtimber and those sites not capable of producing high quality sawtimber. This distribution will provide a mix of forest products to supply local markets. The result is a timber sale program where some timber sales may have costs that exceed revenues.

The estimated demand for timber products from the Forest is 68 million board feet for the first decade of the planning period. This Plan contains an allowable sale quantity of 21 million board feet per year for the first decade. This includes 10 million board feet of high

quality sawtimber and 11 million of low quality sawtimber and pulpwood. Although less than the anticipated demand, this allowable sale quantity is designed primarily to achieve the desired conditions described in the following management prescriptions: 4E1b, 4K1, 4J, 7B, 7C, 7E2, 7F, 8A1, 8B, 8C, 8E1, 8E2b, 8E4b, 8E6, 9A1, 9A3, 9H, and 10B. An additional 1 million board feet is estimated from lands not suitable for timber production, however, since achievement of these desired conditions and objectives is not dependent upon a regular harvest, the volume produced will fluctuate widely.

This Forest Plan identifies 258,900 acres as suitable for timber production. Lands suitable for timber production are shown on a map that accompanies this Plan. Table 2-8 contains a breakdown of the suitability of lands for timber production by management prescription. Appendix F contains a discussion on the determination and location of lands suitable for timber production.

The allowable sale quantity normally includes timber volume from scheduled timber sales on lands suitable for timber production. When salvage cutting occurs on these suitable lands, the salvage volume replaces scheduled timber sale volume and is considered part of the allowable sale quantity. Salvage cutting on lands unsuitable for timber production is

Table 2-8. Acres Suitable for Timber Production

Management Prescription	Total Acres	Suitable Acres	Management Prescription	Total Acres	Suitable Acres
0B	3,500	0	7D	6,000	0
1A	57,800	0	7E1	19,600	0
1B	25,200	0	7E2	51,800	36,200
2C1	900	0	7F	3,900	1,300
2C3	4,400	0	7G	3,700	0
4A	30,700	0	8A1	112,600	85,600
4C1	1,500	0	8B	19,600	13,200
4D	4,700	0	8C	57,300	40,600
4E1a	200	0	8E1	16,000	11,500
4E1b	1,500	1,000	8E2a	2,400	0
4F	1,000	0	8E2b	5,300	4,100
4J	3,900	1,900	8E4a	900	0
4K1	5,200	1,500	8E4b	8,800	6,400
4K2	4,400	0	8E6	1,300	400
4K3	5,100	0	9A1	19,200	12,800
4K4	5,100	0	9A2	<100	
4K5	4,200	0	9A3	1,700	500
4K6	5,500	0	9A4	6,500	0
5A	200	0	9F	7,400	0
5B	200	0	9G1	100	0
5C	3,700	0	9H	24,700	12,900
6A	300	0	10B	16,200	11,600
6B	800	0	11	(73,600)	0
6C	30,200	0	12A	9,700	0
7A	1,800	0	12B	91,300	0
7B	23,500	17,000	12C	9,800	0
7C	1,500	400	TOTAL	723,300	258,900

Since riparian corridors are not mapped, the 73,600 acres in Management Prescription 11 is an estimate. These acres are not subtracted from all of the other prescriptions. There are roughly 723,300 acres on the Jefferson National Forest.

TIMBER MANAGEMENT

Table 2-9. Relationship between Forest Community Types and Timber Management Working Groups

Working Group	Forest Communities
Cove Hardwoods	Northern Hardwood Forest, Mixed Mesophytic Forest, Eastern Riverfront and River Floodplain Hardwood Forests
Upland Hardwoods	Dry-Mesic Oak Forest, Dry and Dry-Mesic Oak-Pine Forests, and a portion of the Dry and Xeric Oak Forest
White Pine	Conifer-Northern Hardwood Forest
Yellow Pine	Xeric Pine and Pine-Oak Forest Woodlands
Scarlet Oak/Black Oak	A portion of the Dry and Xeric Oak Forest

not part of the allowable sale quantity. The allowable sale quantity plus volume produced on unsuitable lands through achievement of desired conditions or salvage comprise the total "Timber Sale Program" listed in Objective 15.01.

Management of the Jefferson National Forest balances the ecological value of leaving dead, dying, and damaged trees as a natural part of the ecosystem with aesthetic desires and economic values of this resource that can be used for fuelwood or sawtimber if removed prior to deterioration. Only a relatively small percent of the mortality across the Forest is removed through salvage cutting operations with the remainder providing organic matter, nutrients, tree cavities, large woody debris, etc. Those dead, dying, and damaged trees that are removed protect the safety of forest visitors, enhance scenery, and provide valuable wood products including fuelwood.

Analysis and standards related to timber management combine the forest communities discussed under the Vegetation and Forest Health Section into working groups. The forest communities are aggregated as shown in Table 2-9.

Appropriate regeneration methods are used that will perpetuate desirable tree species. Regeneration cutting will be done in a variety of methods depending upon the site, species composition, management objectives, scenic guidelines, and wildlife objectives. Decisions on specific regeneration harvest methods are based on site-specific project-level analysis.

GOALS AND OBJECTIVES:

GOAL 15 Where forest management activities are needed and appropriate to achieve the desired composition, structure, function, productivity, and sustainability of forest ecosystems; a result of such activities will also be to provide a stable supply of wood products for local needs.

OBJECTIVE 15.01 Provide a total Timber Sale Program of 4.0 million cubic feet (MMCF) [22 million board feet (MMBF)] annually.

GOAL 16 Provide supplies of those wood products where the Forest Service is in a unique position to make an impact on meeting the demand for those products.

OBJECTIVE 16.01 Provide 8-12 MMBF sawtimber product annually on sites with a site index of 70 or better when compatible with desired condition of the appropriate management prescription.

OBJECTIVE 16.02 Provide 2400 hundred cubic feet (CCF) of fuelwood available for personal use annually.

STANDARDS

Harvesting Methods

FW-111: Use advanced harvesting methods on sustained slopes 45 percent or greater to avoid adverse impacts to the soil and water resources. Use advanced harvest systems on sustained slopes over 20 percent when soils have a high erosion hazard or are failure-prone.

Rotations

FW-112: Rotations are specified under the management prescriptions that are suitable for timber production.

FW-113: Allow harvesting of trees prior to rotation age during the first cutting cycle in order to meet long-term desired condition of a particular management prescription. Regeneration harvesting cuts are not scheduled prior to culmination of mean annual increment.

Even-aged and Two-aged Management

FW-114: The maximum size of an opening created by even-aged or two-aged regeneration cutting is 40 acres in Virginia and 25 acres in West Virginia. Exceptions to these acreage limitations may be permitted following review by the Regional Forester. These acreage limits do not apply to areas treated because of natural catastrophic conditions such as fire, insect or disease attack, or windstorm. Areas managed as permanent openings (e.g., meadows, old fields, wildlife openings, roads, and utility corridors) are not subject to these standards and are not included in calculations of opening size, even when within or adjacent to created openings.

FW-115: Separate even-aged or two-aged harvest units from each other by a minimum distance of 330 feet (5 chains). Such openings may be clustered closer than 330 feet as long as their combined acreage does not exceed the maximum opening size. An even-aged regeneration area will no longer be considered an opening when the certified reestablished stand has reached an age of 5 years.

FW-116: Even-aged or two-aged regeneration cutting may be scheduled next to uneven-aged stands at any time.

Regeneration Harvests

FW-117: Regeneration cutting on lands suitable for timber production must be done under a regeneration harvest method where adequate stocking of desirable species is expected to occur within 5 years after the final harvest cut. The new stand must meet the minimum stocking levels as described in Table 2-10. These apply to both artificial and natural means of stand regeneration. Where natural means are used and stand re-establishment has not been accomplished within 3 years after committing the stand to regeneration, the stand is re-examined for further treatment needs.

Table 2-10. Restocking Standards

Forest Type	Number of Stems per Acre[1]		
	Minimum Level	Desired Level	Maximum Level
White Pine	150	250-300	500
Mixed Pine-hardwood	200	400-600	900
Hardwoods	150	250-300	500
Yellow Pine	300	500-700	900

[1]These levels are guides and must be used in conjunction with professional judgment to determine acceptable restocking levels for a specific site.

FW-118: No heavy equipment is used for site preparation on sustained slopes over 35 percent or sustained slopes over 20 percent when soils have a high erosion hazard or are failure-prone.

Uneven-aged Management

FW-119: Uneven-aged regeneration methods are limited to lands (except as noted below) that are at least 100 acres in size, with slopes less than 30 percent, and within ½ mile of existing roads. Uneven-aged harvest methods can occur on slopes steeper than 30 percent with low impact harvesting systems.

FW-120: Uneven-aged regeneration methods are allowed on lands other than listed in FW-119 when site-specific project objectives include canopy gap creation, scenic enhancement, or restoration/enhancement of old growth forest conditions.

FW-121: There are no dispersion requirements for openings created by uneven-aged regeneration methods. Cutting cycles will vary from 5-20 years depending upon management objectives.

FW-122: The maximum size limit of group selection openings is 2 acres.

Non-Timber Forest Products

FW-123: Unless specifically designated on use permits, collection of non-timber forest products (other than fuelwood) is prohibited within 100 feet of roads and trails in order to disperse collection impacts. Cutting of dead or down trees by personal use permit for fuelwood purposes is allowed Forest-wide from existing roads, except where prohibited by management prescription direction.

FW-124: Collection of botanical products is subject to the following restrictions:

- Commercial moss collection is prohibited.
- Collection within 50 feet of a perennial or intermittent stream is limited to those species that cannot be feasibly collected on upland sites (i.e., no collection of *Rhododendron* is allowed within riparian areas because it can be collected on upland sites.)
- For ground disturbing activities (transplants, root digging, etc.) a maximum of 10 plants will be allowed per permit, with no more than one permit sold to an individual per month.
- Non-destructive collection activities (seed collection, cuttings, etc.) are allowed for all species, except Fraser fir.
- Prohibit collection of Fraser fir seedlings, seeds and cones.

Log Landings and Skid Trails

FW-125: Log landings will be located outside of riparian corridors.

FW-126: All equipment used for harvesting and hauling operations will be serviced outside of riparian corridors.

FW-127: Ruts will be smoothed to restore hydrology and drainage paths.

FW-128: When necessary, landings will be ripped to a depth of 6-8 inches to break up compaction, and to ensure soil productivity and the successful reestablishment of vegetation.

FW-129: Skid trails may cross riparian corridors at designated crossings. If crossing a perennial or intermittent stream is unavoidable, use a temporary bridge or other approved method within the State Best Management Practices (BMPs). All streams are crossed at as close to a right angle as possible. Restoration of skid trails will occur as soon as possible to mitigate impacts.

FW-130: When removing felled trees from areas of hydric soils, use methods that avoid rutting or displacing soil (i.e., use of low ground pressure skidders).

FW-131: Skidding of trees should be directed in a manner that prevents creation of channels or gullies that concentrate water flow to adjacent streams.

FW-132: Temporary stream crossings will be removed and rehabilitated.

FW-133: Dips or waterbars or other dispersal methods will be constructed and maintained to direct stormwater off skid trails and reduce potential sediment flow to streams.

FIRE MANAGEMENT

The presence of fire on the Jefferson National Forest began long before humans arrived in North America. Evidence of lightning fires exists in coal layers and as lightning scars on petrified trees. Sedimentary records are one method of constructing fire histories in the east for pre-European settlement times. These studies typically extract a core of sediment from a pond or bog, and that core is then sampled for fossil pollen, plant macrofossils, sponge spicules, and/ or charcoal.

Studies by Elaine Sutherland and others on Brush Mountain on the New River Valley Ranger District, sought to “reconstruct the historical relationship between fire and community structure using both the age and species composition approach in combination with tree-ring fire history analysis.” The fire scar chronology indicated that fire occurred frequently (every 9-11 years) throughout the 19th century and early 20th century. Most of those fires occurred during the dormant season, most likely in early spring. Hot fires may have occurred during the growing season. They stated that “Fire suppression is most likely the cause of a dramatic change in the composition of the Brush Mountain communities during the last 60 years. In the past, fire clearly promoted integrity of the *Pinus pungens* community on Brush Mountain.”

Even today, lightning and thunderstorms are abundant, and Stephen Pyne in *Fire in America: A Cultural History of Wildland and Rural Fire*, surmised that "a phenomenon of such magnitude and longevity has unquestionably kindled profound evolutionary consequences.”

A clearer picture of change over time is gained when we focus on the period since the last ice age. Dramatic change in plant and animal communities occurred during this post-glacial period. Importantly, humans made their way into Virginia as glaciers receded into Canada. Early human occupation of Virginia dates back to approximately 11,500 BP

FIRE MANAGEMENT

(Before Present) during the Paleoindian period. European contact was relatively early in the region of the Jefferson National Forest, and the written historical record of fire is rich with accounts from travelers and explorers. Early observations describe vast areas of grassy savannas, commonplace smoke and fire, clearings and fields and apparent utilization of fire-managed vegetation. From all accounts, regardless of their perspective, burning by Native Americans was a commonplace practice, serving many needs.

The ecosystems we know today developed within the influence of both climatic and human forces. The result is a forest with diversity and flexibility that is well-adapted to fire occurrence. Oak and southern yellow pine communities have been major components of these forests for thousands of years. These communities promote and require fire. Burning is the oldest sustained land management force on these forests. No other practice can be said to have such a track record with known results. At the other end of the spectrum are the rich mesic cove forests, especially those of the Blue Ridge and Cumberlands where conditions are much wetter and rainfalls are higher. Fire plays little if any role in the mixed mesophytic forest communities found in these coves. They follow more of a gap-phase dynamic pattern and stand structure is frequently uneven aged. Every forest community type has a different mix of disturbance agents operating at different frequencies and intensities depending on current and past climatic conditions.

Air Quality

The Environmental Protection Agency (EPA) states, in their 1998 policy document entitled *Interim Air Quality Policy on Wildland and Prescribed Fires*, that while future air quality concerns from prescribed fire may arise, the EPA is on record stating that fire should function, as nearly as possible, in its natural role in maintaining healthy wildland ecosystems and human health and welfare should be protected by mitigating the impacts of air pollutant emissions on air quality and visibility.

During the period covered by the 1985 Jefferson Plan, EPA tightened the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) and ozone. For PM they added a new standard (PM2.5) that focuses on the group of very small particles which have a diameter of 2.5 microns or less. For ozone, they revised the statistic that must be met for NAAQS attainment. Both revisions involve pollutants that are emitted from national forest management activities, especially prescribed fire. Virginia air quality monitoring data (2000 – 2002) indicate that at least one county with national forest land inside, or near, its boundary may fall out of NAAQS attainment during the time frame of the revised Plan, as a result of these revisions. If any counties near the national forest are classified by the State as “nonattainment” for NAAQS, national forest managers will then need to work with State air quality regulators to develop emissions inventories and other information. National forest emission inventories will be incorporated with other air pollution inventories as the State Implementation Plan is modified to restore NAAQS attainment.

Wildland Fire Use & Suppression

The role of wildland fire as an essential ecological process has been incorporated into this Forest Plan. Wildland Fire Use will become an option for the management of natural (lightning-caused) fires in Management Prescriptions identified as suitable for Wildland Fire Use when we have completed a Fire Management Plan for the Forest. The Fire Management Plan uses information about fire regimes, current conditions, land management objectives, and monitoring to provide for a full range of management actions and maintains a close link between this Forest Plan and our fire program. When a wildland fire ignites in an area identified as suitable for wildland fire use within the parameters established in the Fire Management Plan, a decision is made whether the fire will be suppressed or managed for resource benefits. The Wildland Fire Implementation Plan documents the thought process involved in this decision.

Appropriate suppression strategies include 1) direct attack to minimize acreage burned and resource value loss; 2) indirect attack when fire behavior is too extreme to safely use direct suppression tactics; and 3) monitoring of a fire's progress within a defined perimeter. Appropriate suppression strategies take into account resource values, economic expenditures, and critical firefighting resource priorities, while always providing for firefighter and public safety as the highest consideration. Wildland fire suppression does not consider or attempt to achieve resource objectives.

Prescribed Fire and Mechanical Fuels Treatments

Prescribed fire and mechanical fuels treatments are designed to restore fire regimes within or near an historical range. Condition classes are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, stand structure, successional stage, stand age, and canopy closure. Fire Condition Class is a measure of general wildland fire risk and ecosystem condition defined as follows:

Condition Class 1: For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structure are intact. Fire dependent ecosystem components are maintained by desired fire regimes. Thus, the risk of losing key ecosystem components from the occurrence of wildland fire remains relatively low.

Condition Class 2: Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.

Condition Class 3: Fire regimes on these lands have been significantly altered from their historical return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure, and diversity components have been significantly altered. Consequently, these lands verge on the greatest risk of ecological collapse.

GOALS AND OBJECTIVES:

GOAL 17 Achieve a balance between suppression to protect life, property, and resources, and fire use to regulate fuels and maintain healthy ecosystems. Use wildland fire to protect, maintain, and enhance resources, and, as nearly as possible, allow it to function in its natural ecological role.

GOAL 18 Fire regimes are restored within or near the historical range (Condition Class 1) resulting in maintenance and restoration of ecosystem components.

OBJECTIVE 18.01 Maintain a prescribed burn cycle of 3-8 years in fire-maintained forest and grassland communities containing threatened, endangered, sensitive, and locally rare species. (For example: piratebush, box huckleberry, smooth green snake, and sword-leaf phlox).

FIRE MANAGEMENT

OBJECTIVE 18.02 Maintain a prescribed burn cycle of 4-12 years in **Dry and Xeric Oak Forest, Woodlands, and Savannas** and in **Xeric Pine and Pine-Oak Forest and Woodland** communities.

OBJECTIVE 18.03 Maintain a prescribed burn cycle of 8-20 years in **Dry-Mesic Oak Forest**, and **Dry and Dry-Mesic Oak-Pine Forest** communities.

OBJECTIVE 18.04 Reduce hazardous fuels across 4200 acres per year with priority given to areas where fire regimes have been moderately (Condition Class 2) or significantly (Condition Class 3) altered from their historic range; and areas affected by insects, diseases, ice damage, or along National Forest boundaries with high values at risk.

GOAL 19 Emissions from prescribed fire will not hinder the state's progress toward attaining air quality standards and visibility goals.

OBJECTIVE 19.01 Demonstrate conformity with the State Implementation Plan for any prescribed fire planned within EPA-designated "non-attainment" and "maintenance" areas.

STANDARDS

Wildland Fire Suppression

FW-134: Ensure firefighter and public safety as the first priority. Secondly, protect property and natural and cultural resources based on the relative values to be protected.

FW-135: Suppress human-caused wildland fires (either accidental or arson).

FW-136: The full range of suppression tactics (from full suppression to monitoring) may be used, consistent with forest and management prescription direction.

FW-137: Suppress wildland fires at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

FW-138: Where needed to prevent erosion, firelines are revegetated and water-barred promptly after the fire is controlled.

Wildland Fire Use

FW-139: The management of lightning caused wildland fires is allowed when the Fire Management Plan is completed and a Wildland Fire Implementation Plan is approved for the specific wildland fire.

FW-140: Lightning-caused fires are allowed to play their natural ecological role as long as they occur within prescribed weather and fuel conditions and do not pose unmitigated threats to life and/or private property, particularly to that property within the wildland/urban interface zone.

Prescribed Fire

FW-141: Use existing barriers, e.g. streams, lakes, wetlands, roads, and trails, whenever possible to reduce the need for fireline construction and to minimize resource impacts.

FW-142: Best available smoke management practices will be used to minimize the adverse effects on public health, public safety and visibility in Class I areas (James River Face Wilderness and Shenandoah National Park) from prescribed fire.

FW-143: Conduct prescribed burning only if meterological conditions ensure that smoke will be carried away from areas with a high forecasted Air Quality Index (Orange or higher).

FW-144: All managed burns will comply with Smoke Management Programs for Virginia and West Virginia, when these are implemented. (Per EPA's "Interim Air Quality Policy on Wildland and Prescribed Fires" which was developed with involvement of the USDA Forest Service).

FW-145: Identify caves or abandoned mines that contain significant populations of bats as smoke-sensitive targets. Avoid smoke entering these caves or mines when bats are present.

FW-146: Do not conduct prescribed fires when the Keetch-Byram Drought Code (Cumulative Severity Index) is 200 points above the average for the relevant time of the year.

FW-147: Do not plan prescribed fires in mesic deciduous forest communities (northern hardwood, mixed mesophytic, and river floodplain hardwood) that do not contain a significant oak component. When practical and without resulting in increased fireline construction, avoid burning these communities when implementing prescribed fires in adjacent forest communities.

FW-148: When necessary to include mesic deciduous forest communities within burning blocks, direct firing will not be done unless necessary to secure control lines. In these cases, allow low intensity fires. Exceptions are allowed when the fire is designed to encourage oak regeneration.

FW-149: Maintain and restore Table Mountain pine and pitch pine forests through moderate to high intensity prescribed fires.

Other Fuels Treatment

FW-150: Only mowing, chopping, or shearing treatments are used on sustained slopes over 15 percent. No heavy equipment is used for mechanical fuels treatments on sustained slopes over 35 percent. Mechanical fuels treatments are prohibited on sustained slopes over 20 percent when soils have a high erosion hazard or are failure-prone.

RECREATION - DEVELOPED, DISPERSED, AND BACKCOUNTRY

The Jefferson National Forest, along with the George Washington National Forest, provide the majority of undeveloped public land in Virginia and will become increasingly important in a region experiencing major population growth. The Forest provides spectacular upland scenery, unique ecosystems, trails, and related recreation opportunities. Interstates, the Blue Ridge Parkway, and 1,125 miles of trail systems, including the Appalachian National Scenic Trail, facilitate easy access. The proximity of large urban areas in northern Virginia, the Richmond-Tidewater, and North Carolina Triad-Research Triangle-Charlotte metro areas promotes high volume urban escapes, and the more rural lands are the backyard playgrounds and tourism attractions for many smaller communities.

The rugged mountain landscape makes premier sightseeing and trails the focus of the Forest. Seasonal flora, waterfalls, streams, and lakes, wildlife, and pristine scenery set the stage for a wide variety of recreation experiences. The Forest provides trail experiences for varied interests and skill levels. The Appalachian Trail offers quality day hiking and long distance backpacking. Most trails on the Forest are designed for multiple uses: foot, bike, and horse. The Mount Rogers high country attracts visitors from outside the region, providing a unique horseback riding experience and spectacular views. Mountain biking continues to grow in popularity with some trails, like the Virginia Creeper, also drawing recreationists from far outside our region. Limited public land available for Off-Highway Vehicle and All-Terrain Vehicle use in the region positions the Forest to serve this interest in a carefully planned and environmentally responsible manner.

Lakes, streams, upland forests, and historic sites provide the attraction for day and overnight camping visits by urban recreationists. The more rural parts of the Forest are well-suited for nearby residents to enjoy hunting, fishing, camping, and other dispersed recreation experiences. There are many opportunities for visitors to learn about natural and cultural resources and how to recreate responsibly.

Although the opportunities for outdoor recreation are extensive and the public demand for these opportunities is seemingly endless, the Forest's capability to meet these demands is neither static nor endless. Visitor preferences can shift over time, and both changing financial limitations and environmental impacts must be considered. In order to maximize value to the public with the limited resources available, the forest will focus on providing those recreation opportunities, which are unique, or of exception long-term value, in a manner that focuses on maximizing visitor satisfaction within financial and environmental limitations.

GOALS AND OBJECTIVES:

GOAL 20 Provide a spectrum of high quality, nature-based outdoor recreation experiences that reflect the exceptional resources of the Forest and interests of the recreating public in an environmentally sound and financially sustainable basis. Adapt management of recreation facilities and opportunities as needed to shift limited resources to those opportunities.

OBJECTIVE 20.01 Maintain 117,000 acres of Semi-Primitive Non-Motorized (SPNM), 20,700 acres of Semi-Primitive Motorized (SPM), and 98,800 acres of Semi-Primitive 2 (SP2) backcountry recreation opportunities.

OBJECTIVE 20.02 Increase the following recreation opportunities within the capabilities of the land:

- Wildlife and bird viewing, photography, interpretive opportunities, and nature trails;
- Day use and group facilities;
- Water-based activities;
- Hiking, biking, and equestrian trail systems, especially in non-motorized settings with high quality landscapes;
- Designated Off-Highway Vehicle roads for full size off road vehicles;
- Special Interest Areas - historical, geologic, and prehistoric.

OBJECTIVE 20.03 Maintain approximately 1,125 miles of non-motorized trails and approximately 60 miles of motorized trails.

OBJECTIVE 20.04 Evaluate one new All-Terrain Vehicle area on the southern end of the I-81 corridor and one on the Clinch Ranger District.

STANDARDS

Developed Recreation

FW-151: Manage developed recreation areas according to Management Prescription 7D.

Dispersed Recreation

FW-152: Disabled hunter access is provided on roads and trails specifically designated for such use.

Backcountry Recreation

FW-153: Manage backcountry recreation areas according to Management Prescriptions 12A, 12B, 12C, or 8C.

Trails

FW-154: The Appalachian Trail standards are addressed in the standards for Management Prescription 4A.

FW-155: Trails are closed to motorized recreation use unless designated otherwise.

FW-156: Motorized use of the trail system is permissible for administrative purposes, emergencies, and at road crossings, when the trail is specifically designated for motorized use, or when the trail is on or coincident with an open public road.

FW-157: Any new trail construction or reconstruction is carefully located to avoid impacts to threatened, endangered, sensitive, or locally rare species habitat.

FW-158: Management activities along system trails shall be implemented with sensitivity to the experience of the users. Appropriate techniques to mitigate the effects of management activities are addressed during site-specific project analysis. Measures to mitigate the effects of activities might include vegetative screening; the temporary re-routing of trail segments; temporary

trail closure, avoidance and reclamation; and timing of project implementation to reduce impacts during high use periods.

FW-159: If unacceptable resource damage is identified, that section of the trail will be closed, and be re-routed if possible, until the damage is repaired.

Recreation Opportunity Spectrum

FW-160: The Recreation Opportunity Spectrum (ROS) inventory completed for this Forest Plan is displayed on a Map accompanying this Forest Plan. The Standards in this section and under each Management Prescription in Chapter 3 refer to this inventory.

FW-161: New structures and facilities are constructed and maintained to meet the adopted ROS class for the area.

FW-162: Recreation opportunity maps will govern all new projects, including special uses. Existing conditions may not meet the assigned ROS classes.

Exceptions to the following six standards are made for fire management and valid existing rights and leases.

FW-163: Prohibit new road construction, including temporary roads, in **semi-primitive non-motorized** areas. These areas do not contain any improved roads. Motorized recreational uses are prohibited within semi-primitive non-motorized areas. Administrative motorized uses, such as those associated with fire suppression, prescribed burning, maintenance of wildlife openings, or forest health needs are allowed.

FW-164: Prohibit new permanent road construction within **semi-primitive motorized** areas. Road restoration and maintenance is limited to that necessary to protect soil, water, and biological resources. Road restoration is done in such a manner as to maintain the unimproved nature of the road. Temporary road construction within semi-primitive motorized areas is allowed provided such roads are obliterated following the temporary use.

FW-165: Maintain existing unimproved roads and motorized trails within **semi-primitive motorized** areas to a standard necessary to protect soil, water, and biological resources while maintaining an off-highway type recreation experience.

FW-166: **Semi-primitive 2** areas are designated under this Forest Plan to prevent loss of semi-primitive non-motorized and semi-primitive motorized recreation opportunities. Management activities and uses, including-but not limited to—timber harvest, prescribed burning, livestock grazing, off-highway vehicle use, mineral leasing, and special use authorizations, are allowed provided such use will not result in a loss of semi-primitive non-motorized or semi-primitive motorized recreation opportunities.

FW-167: Prohibit new permanent road construction within **semi-primitive 2** areas. Road restoration and maintenance is allowed provided an unimproved or temporary road is not converted to an improved or permanent road. Allow temporary road construction in semi-primitive 2 areas, provided such roads are obliterated following the temporary use.

FW-168: Maintain existing improved roads within **semi-primitive 2** areas when necessary to achieve the desired condition of the appropriate management prescription. Decommission unneeded roads in these areas.

Off-Highway Vehicles (OHVs)

FW-169: Designated routes for full size off road vehicles and use areas for ATVs are managed under Management Prescription 7C.

FW-170: OHV use on open public roads is limited to licensed vehicles and operators that comply with motor vehicle laws of the state.

FW-171: Full size off road vehicles are permitted on Forest Service roads open to the public. These vehicles must be street legal and properly licensed. Trail use is not permitted.

FW-172: ATV's are restricted to routes (roads and trails) specifically designated as open to such vehicles.

FW-173: Cross-country motorized use, off open and designated roads and trails, is prohibited except in the case of emergency, e.g. wildland fire or search and rescue.

FW-174: Consideration of new ATV Use Areas begins with a screening process. Demand for new routes and use areas is determined and documented. In measuring demand, the following factors are normally included: the commitment of a club for assistance with construction, maintenance, patrolling and monitoring; significant number of requests by users or other citizens to provide facilities; demonstrated conflicts with other Forest users; and existing uncontrolled use.

FW-175: OHV routes are preferred that can provide a two-hour or longer riding experience and that have looping characteristics or are a part of a larger transportation system. Routes that provide access for disabled visitors or seasonal hunters may be exceptions.

FW-176: Candidate roads and trails are eliminated or mitigating measures are planned where soil and water quality cannot be maintained within acceptable standards.

FW-177: OHV routes are selected that avoid sensitive areas including, but are not limited to, threatened, endangered, and sensitive species habitat, rare communities, and native brook trout streams.

FW-178: Following evaluation, new routes and use areas are incorporated into Management Prescription 7C. In the case of a new ATV Use Area, this will be done through a forest plan amendment.

FW-179: New routes and use areas can only be considered in Management Prescriptions designated as suitable for such uses.

Types of OHVs

All-Terrain Vehicles (ATVs): Unlicensed, three- or four-wheeled vehicles, 50 inches wide or less.

Motorcycles: Licensed or unlicensed.

Full size off road vehicles: Licensed, over 50 inches wide, like Jeeps, with high clearance for traveling over rough terrain.

See also the Glossary in Appendix B.

WILDERNESS AND WILD & SCENIC RIVERS

The Jefferson National Forest contains 11 wildernesses, totaling 57,645 acres. A list of these wildernesses and their respective acreages is shown in Table 2-11. Small portions of the Shawvers Run and Barbour's Creek Wildernesses are located on the George Washington National Forest. These include 95 acres of the Shawvers Run Wilderness and 20 acres of the Barbour's Creek Wilderness. Each of the wildernesses has an implementation document and a Wilderness Implementation Schedule, which outlines direction for management of the wilderness. The Limits of Acceptable Change Process is used to update the plans and schedules for each wilderness as needed. Lewis Fork, Little Wilson Creek, and Mountain Lake Wildernesses receive moderate to high levels of visitor use. James River Face, Peters Mountain and Thunder Ridge Wildernesses receive a moderate amount of use while the remaining units receive a low level of visitation. In

WILDERNESS AND WILD & SCENIC RIVERS

Table 2-11. Congressionally Designated Wilderness Areas

Wilderness Area	Acres	Wilderness Area	Acres
James River Face	8,886	Kimberling Creek	5,542
Thunder Ridge	2,344	Beartown	5,609
Barbour Creek*	5,382	Little Dry Run	2,858
Shawvers Run*	3,467	Lewis Fork	5,618
Mountain Lake	11,113	Little Wilson	3,613
Peters Mountain	3,328		

* Includes 20 acres of Barbours Creek and 95 acres of Shawvers Run on the George Washington National Forest.

general, the level of use can be correlated to the occurrence of key attractions and trails like the Mount Rogers High Country and the Appalachian Trail. The impacts of human recreation use and illegal motorized use are the major management concerns.

James River Face Wilderness is designated a Class I area under the Clean Air Act Amendments of 1977. Air Quality Related Values (AQRV) for this Class I area are visibility, water quality and vegetation. The AQRVs are suffering adverse effects from current and historic levels of air pollution. Sulfur compounds in the atmosphere are primarily responsible for the haze that reduces visibility. Sulfur compounds, and sometimes nitrogen compounds, cause acidification of headwater streams, and can cause nutrients to leach out of soils. Ozone causes visible injury to plant leaves, and can also reduce plant growth. The pollutants originate from many sources over a wide geographic area, and

Table 2-12. Eligible Recreational Rivers

River	Ranger District	Length (miles)	Counties	NFS Ownership (left bank)[1]	NFS Ownership (right bank)	Outstandingly Remarkable Values	Responsibility for Suitability Analysis
Little Stony	New River Valley	3.2	Giles	3.2	2.8	Scenic, Recreation, Geologic	Forest Service
Stony Creek	New River Valley	8.3	Giles	7	6	Fisheries/ Aquatic[2]	Forest Service
Clinch River	Clinch	5.5	Scott	0.4	0	Heritage/Cultural, Botanic/Ecologic, Geologic	Commonwealth of Virginia
Guest River	Clinch	6.5	Wise, Scott	3.5	1.7	Scenic, Geologic, Recreation, Heritage/Cultural, Botanic/Ecologic	Commonwealth of Virginia
Little Stony	Clinch	8.5	Scott	8.5	8.5	Scenic, Wildlife, Botanic/Ecologic, Geologic	Forest Service
Russell Fork	Clinch	8.7	Dickenson	0	4.4	Scenic, Wildlife, Recreation, Heritage/Cultural, Botanic/Ecologic, Geologic	Commonwealth of Virginia
James River	Glenwood	23	Botetourt, Rockbridge	10	0	Scenic, Recreation, Heritage/Cultural, Biologic/Ecologic, Geologic	Commonwealth of Virginia
North Creek	Glenwood	7	Botetourt	7	7	Scenic, Recreation	Forest Service
Whitetop Laurel/ Green Cove	Mount Rogers NRA	12	Washington	10.5	10	Scenic, Recreation, Geologic	Forest Service

[1] Left and Right banks are looking upstream.

[2] Highlighted Outstandingly Remarkable Values are Nationally Significant. Others are Regionally Significant.

therefore regional approaches to air pollution emission reductions are necessary to improve air quality and resource conditions. It is essential that the Forest work cooperatively with air management agencies and regional planning organizations to improve visibility conditions (Regional Haze Regulation, EPA 1999) and reduce air pollution impacts to other AQRVs at James River Face.

Three miles of Roaring Branch on the Clinch Ranger District were identified as eligible to be considered for designation as part of the National Wild and Scenic Rivers System under the "Wild" classification. Roaring Branch is managed under Management Prescription 2C1. The rivers shown in Table 2-12 were found to be eligible for consideration as potential Wild and Scenic Rivers with a Recreational Classification. Little Stony on the New River Valley Ranger District, the Clinch River, the Guest River, and Little Stony on the Clinch Ranger District are managed under Management Prescription 2C3.

Stony Creek is managed under management prescription 9A4 (Aquatic Habitat Areas). National Forest System lands make up a very small proportion of Russell Fork and the James River. Russell Fork is managed under the adjacent management prescription 4C (Special Geologic Area). The James River is managed under management prescriptions 9G (Bottomland Hardwoods), 7E2 (Dispersed Recreation), and 9F (Rare Communities). North Creek and Whitetop Laurel/Green Cove both lie within 4K (Special Areas).

The outstandingly remarkable values of all eligible rivers will be protected regardless of their management prescription allocation.

GOALS AND OBJECTIVES:

GOAL 21 Wilderness, roadless and other backcountry areas are managed to provide their full range of social and ecological benefits.

OBJECTIVE 21.01 Maintain wilderness character within wilderness (Management Prescription 1A) and wilderness study areas (Management Prescription 1B).

OBJECTIVE 21.02 Maintain 152,900 acres of roadless in a natural unroaded condition.

OBJECTIVE 21.03 Restore natural role of fire in wilderness by developing Wildland Fire Use plans for all wilderness areas during this planning period.

GOAL 22 Reduce air pollution impacts to the Air Quality Related Values of the Class I area, James River Face Wilderness, through a cooperative working relationship with agencies managing air quality.

OBJECTIVE 22.01 Conditions of Air Quality Related Values improve over current adversely affected levels.

WILDERNESS AND WILD & SCENIC RIVERS

SCENERY

GOAL 23 Wild, Scenic and Recreation Rivers which are designated by Congress, recommended for designation, or are eligible for designation, will be managed to protect their outstandingly remarkable values and free-flowing condition..

OBJECTIVE 23.01 Complete the suitability study for North Creek and Roaring Branch this decade.

GOAL 24 Obtain full public ownership of lands within wilderness boundaries, including subsurface.

STANDARDS

Wilderness Management

FW-180: Review all Prevention of Significant Deterioration (PSD) permits within 200 km of the Class I area that might affect current AQRV using screening procedures specific to the James River Face Wilderness and federal land manager AQRV guidance.

FW-181: 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.

Wild & Scenic River Management

FW-182: Protect the outstandingly remarkable values and free-flowing condition of the eligible Wild and Scenic River segments.

SCENERY

Public concern for the quality of scenery on the Jefferson National Forest is ever increasing. Many sightseers visit the National Forest as part of an interwoven experience with other tourist opportunities. The mountainous Jefferson National Forest provides many opportunities for high quality, nature-related and rural culture sightseeing and scenic viewing. The vast majority of the forest is covered with an almost continuous canopy, creating a natural-appearing landscape character. Scenic features on the Forest include the Mount Rogers National Recreation Area with its outstanding high mountain balds and Whitetop Mountain, eleven Congressionally designated wilderness areas, over 200 miles of the Appalachian National Scenic Trail, the Mount Rogers National Scenic Byway, the Big Walker National Scenic Byway, 45 miles of the Blue Ridge Parkway, one eligible wild river and nine eligible recreational rivers, the beautiful James River and New River corridors and the Guest River Gorge. Numerous distinctively scenic and historic “special places” of a more localized importance are also available. The Jefferson National Forest offers premier opportunities for wildlife viewing and driving for pleasure.

These highly visible lands, including those adjacent to communities, heavily used waterways, major forest trails, scenic road corridors and major interstate and state highways through the forests, present challenges to land managers. Site-specific project analysis with multi-resource teams and management of lands within a holistic landscape perspective help resolve potential conflicts between scenery management and other resource objectives.

A visual inventory was mapped on Forest lands in the late 1970’s and early 1980’s using

the Forest Service Visual Management System (VMS). With that inventory, the 1985 Jefferson National Forest Plan established Visual Quality Objectives (VQOs) for management of the visual resource. With over 20 years of research and experience, the VMS was refined and replaced in 1995 by the Scenery Management System (SMS). This system increases the role of constituents throughout the inventory and planning process, and it borrows from and is integrated with basic concepts and terminology of Ecosystem Management. The system provides for improved integration of aesthetics with other biological, physical, and social/cultural resources in the planning process.

Since the initial visual inventory, concern for scenic quality and recreation use increased in many parts of the Forest. To update the inventory, Forest landscape architects and other personnel checked all major roads (interstate, federal, and selected state and Forest roads), major vistas, developed sites, key hiking trails and other identified viewing areas during leaf-off season in the 1990's. Citizens were invited to review the scenery inventory and their comments were considered in the current inventory.

The inventoried combination of viewing distance, concern level and scenic attractiveness on Jefferson National Forest lands, produced Scenic Classes from 1 (the highest level) to 6. Scenic Integrity Objectives (SIOs) were established for each Management Prescription. These are not based on the landscape integrity that exists on the ground, but are an expression of a desired condition. SIOs range from Very High (VH) meaning no alterations to the landscape, to Low (L) meaning moderate alterations to the landscape. In each Management Prescription, a range of SIOs is applied to management activities based on the inventoried Scenic Class. The crosswalk between the new SMS-SIOs and the original VMS-VQOs is displayed in Table 2-13. Standards for SIOs are stated in Chapter 3 for each Management Prescription.

Table 2-13. Relationship between old Visual Management System and new Scenery Management System

SMS - SIOs	Appearance	VMS - VQOs
Very High	Unaltered	Preservation
High	Appears Unaltered	Retention
Moderate	Slightly Altered	Partial Retention
Low	Moderately Altered	Modification

The scenery inventory process will continually refine and update Scenic Classes on a regular basis during project analysis and be incorporated into the database. Implementation of the best available technology will aid future planning for the Forest's scenery. Geographic Information Systems and Global Positioning Systems and other technology based on terrain along with ground-truthing, will be used to aid in determining lands seen from viewpoints, travelways and use areas.

GOALS AND OBJECTIVES:

GOAL 25 Protect and enhance the scenic and aesthetic values of the National Forest lands in the Southern Appalachians.

OBJECTIVE 25.01 Manage the Jefferson National Forest with the following Scenic Integrity Objectives (acres are approximate): Very High 100,000 acres, High 283,000 acres, Moderate 242,000 acres, and Low 98,000 acres.

SCENERY

OBJECTIVE 25.02 Raise 600 acres of Very Low and Unacceptably Low existing scenic integrity to a higher level within this planning period.

GOAL 26 Provide a variety of Landscape Character themes with the predominant themes being Natural Appearing and Natural Evolving including variations of these themes. Maintain smaller enclaves of Pastoral/ Agricultural, Historic/Cultural, Rural/Forested, and Urban landscape character themes.

STANDARDS

Scenery

FW-183: The Scenery Management System guides protection and enhancement of scenery on the Jefferson National Forest. The Scenic Class inventory, including Landscape Visibility, Concern Level, and Scenic Attractiveness, is maintained, refined, and updated as a result of site specific project analysis. The Standards under each Management Prescription in Chapter 3 refer to Scenic Class inventory as updated.

FW-184: The Forest Scenic Integrity Objectives (SIOs) Maps govern all new projects (including special uses). Assigned SIOs are consistent with Recreation Opportunity Spectrum management direction. Existing conditions may not currently meet the assigned SIO.

FW-185: Lands mapped as Concern Level 1 middleground from travelways (see glossary) and use areas will be inventoried as Scenic Class 2 or higher and will be managed for an SIO of Moderate or higher.

FW-186: Shape and orient vegetative management openings in the forest canopy to contours and existing vegetation patterns to blend with existing landscape characteristics. Shape and feather edges in High and Moderate SIO areas. Some edges may not need feathering to meet the SIO. Do not use geometric shapes.

FW-187: In seed-tree and shelterwood methods, in High and Moderate SIO areas, delay removal of overstory until understory is 10 feet or more in height.

FW-188: Apply leave tree and unit marking to not be visible within 100 feet of concern level 1 and 2 travelways and use areas.

FW-189: Remove, burn, chip or lop slash when visible within a 100-foot zone of concern level 1 & 2 travelways and use areas. These treatments result in an average slash height of 2 feet of the ground.

FW-190: Design and construct roads to blend with the desired landscape character in form, line, color and texture.

FW-191: During temporary or permanent road construction, eliminate or remove from view, slash and root wads in the immediate foreground in High and Moderate SIO zones to the extent possible. Some slash may be aligned parallel to roads at the base of fill slopes to collect silt.

FW-192: Remove or place out of sight root wads and other unnecessary debris within 150 feet of key observation points on concern level 1 and 2 travelways and use areas.

FW-193: Locate bare mineral soil areas from log landings, roads and bladed skid trails out of view from concern level 1 and 2 travelways and use areas, when practical.

FW-194: Cut stems to within approximately 6 inches of the ground when doing roadside maintenance and utility crossing maintenance at roads and trails.

FW-195: Exclude gravel pits and borrow areas from the seen area of visually sensitive concern level 1 and 2 travelways and use areas.

FW-196: Accomplish mowing or bush hogging prior to roadside herbicide treatment in Very High and High SIO areas.

FW-197: Revegetate cut and fill soil slopes.

FW-198: Structures have finishes that reduce contrast with the desired landscape character.

FW-199: Selectively remove trees to improve amenities within high use areas, vista points, and along interpretive trails.

FW-200: When consistent with other objectives, favor flowering and other visually attractive trees and understory shrubs when leaving vegetation.

FW-201: Favor 14 inch and larger trees in a mixture with other smaller sized tree stems when creating spatial diversity along travelways and in recreation use areas. Provide a range of tree diameters.

FW-202: When engaged in scenery enhancement activities, introduce or favor native wildflowers, shrubs, and/or trees with showy flowers, fall foliage, and/or fruits.

HERITAGE RESOURCES

The Jefferson National Forest contains a multitude of sites representing past human events. Beginning with Native American occupations dating as earlier as 8000 B.C., the variety of cultural resources is impressive. Prehistoric sites include multi-use base camps, transient camps, hunting and gathering stations, quarries, lithic reduction stations, and rock-shelter occupations. The most common site type is often referred to as a lithic scatter and represents a short-term occupation where stone tools were made and/or sharpened.

Native American sites are found throughout the Forest for the Archaic Period from 8000 B.C. to 1000 B.C. and the Woodland Period from about 1000 B.C. to A.D. 1650. Sites from the Historic Era mark the first explorations by Europeans in the second half of the 17th century with settlement beginning in the second quarter of the 18th century. Historic sites for this period include log cabins and outbuildings associated with agriculture, cemeteries, mills, schools, iron furnace complexes, mines, colliers pits, logging camps, turnpikes, and railroad features. The Jefferson National Forest contains a large number of these historic features as well as later sites relating to the Civilian Conservation Corps. Significant structures on the Jefferson National Forest include the Green Cove Station, the Konnarock Lutheran Girls' School, the Sullivan Tract 19th century farmstead (Settlers Museum of Western Virginia), Glenwood Furnace, Catawba Furnace, Roaring Run Furnace, and Raven Cliff Furnace.

The national "Windows on the Past" program is implemented to improve public understanding of our heritage, to raise public awareness of the fragile and irreplaceable nature of heritage resources, and to provide enhanced public recreation opportunities. Opportunities are provided for the public to observe or to participate in all phases of Forest Service heritage management. The "Passport in Time" program is utilized to involve amateur and professional volunteers in selected aspects of preservation and management efforts. Public outreach and involvement efforts are emphasized with local

schools and organizations. Partnerships are developed with external organizations, groups, and individuals to provide a public service through heritage resources.

GOALS AND OBJECTIVES:

GOAL 27 The Forest undertakes a systematic program of heritage resource inventory, evaluation, and preservation aimed at the enhancement and protection of significant heritage resource values in compliance with Sections 106 and 110 of the Historic Preservation Act of 1966 as amended (1980). Integration of heritage resource management concerns is emphasized, as is coordination with the public, scientific community, and appropriate Native American and other ethnic groups.

OBJECTIVE 27.01 Develop 10 preservation/maintenance plans for historic administrative and recreational facilities over the next decade.

STANDARDS

Heritage Resources

FW-203: Coordinate inventory, evaluation, nomination, protection, enhancement, and interpretation procedures with the appropriate State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation (ACHP), and Tribal Historic Preservation Officer (THPO) as necessary before project decisions.

FW-204: Projects are designed to avoid, minimize, or mitigate negative effects on potentially significant heritage resources. In-place protection of identified sites is the minimum requirement until site significance is determined.

FW-205: Evaluations are scheduled and conducted if a project would have any effect on a heritage resource potentially eligible for the National Register of Historic Places. Evaluations are scheduled and conducted if the responsible official and State Heritage Preservation Office (SHPO) disagree on whether a heritage resource is potentially eligible for the National Register of Historic Places.

FW-206: Decision documents (Record of Decision, Decision Notice or Decision Memo) will evidence compliance with the NHPA, 36 CFR 800, and other Heritage-related regulations, as appropriate. A project (or undertaking) not in compliance will be suspended by the Forest Supervisor until compliance is documented.

FW-207: A consultation with the SHPO and Advisory Council on Historic Preservation is in order when it is determined that the project would affect an eligible site, and the project cannot be relocated or modified to avoid the site.

FW-208: Consultation will include, when necessary, federally recognized Native American tribes with geographic or cultural ties to the Forest, pursuant to provision in the Archeological Resources Protection Act (ARPA), American Indian Religious Freedom Act (AIRFA), Native American Graves Protection and Repatriation Act (NAGPRA), and the Region 8/Region 9 Treatment of Human Remains Policy. Forest Heritage staff will develop mechanisms for consultation. Provide for traditional use or collection of forest resources by Native Americans.

FW-209: A determination of effect, in coordination with SHPO, must be carried out in

the event that a heritage resource determined eligible for or included on the National Register of Historic Places cannot be avoided, or the project delayed, and if the proposed project could affect the property either beneficially or negatively.

FW-210: Ensure that Section 106 compliance clauses are inserted in contracts and sales documents, and that clauses are discussed in pre-work conferences.

FW-211: If additional evidence or information regarding a "not significant" property becomes available, it will be re-evaluated.

RANGELAND RESOURCES

Rangelands on the Jefferson National Forest were established as a result of acquisition of old farms with open fields, bottomland pastures, and the high elevation open grasslands of the Mount Rogers National Recreation Area. These areas continue to be managed for their aesthetic value in providing a pastoral or high elevation alpine-like landscape character. Desired Conditions and Standards for rangeland management are provided for in Management Prescriptions 7G (Pastoral Landscapes), 4K3 (Mount Rogers Crest Zone Special Area), and 4K4 (Whitetop Mountain Special Area).

Sound range management practices also provide healthy forage for both domestic livestock and wildlife, valuable grassland habitat for many species of birds, and numerous recreational opportunities, like hunting, horseback riding, wildlife viewing, photography, picnicking, berry picking, and camping. Soil and water resources are closely monitored and protected. Non-native invasive species are monitored and controlled to the extent possible.

The grazing program on the Forest consists of approximately 8,200 acres of rangelands with capacity to support approximately 10,300 Animal Unit Months. Rangelands are managed in accordance with an approved Allotment Management Plan, which establishes the current and proposed forage species, forage trend data, existing and proposed structures, type of livestock, stocking capacity, season of use, special resource protections, vegetation management, problem areas, and a monitoring plan including an implementation schedule. All grazing use is by permit only and includes development of a variety of livestock control measures and rangeland improvements, like fences, water developments, and vegetation improvements.

GOALS AND OBJECTIVES:

GOAL 28 Sound range management practices help to maintain important forest openings and aesthetically pleasing pastoral settings.

OBJECTIVE 28.01 Maintain 8,200 acres of pastures, old fields, and high elevation meadows through livestock grazing.

OBJECTIVE 28.02 Identify needs for new or replacement rangeland facilities and prioritize opportunities based on effects to resource conditions.

STANDARDS

Rangeland Resources

FW-212: Where rangeland facilities or practices are identified as contributing to the degradation of water quality, aquatic species, rare communities, or federally listed or sensitive species habitat, remedial actions may include changes in management strategy, alternation, temporary closure, relocation, or discontinuance of the permit.

FW-213: Term grazing permits are preferred over other permit types because of their stronger controls, management flexibility, and Fee Credit availability.

Additional standards related to grazing and rangelands can be found in Management Prescriptions 7G, 4K3, 4K4, and 11.

MINERALS AND GEOLOGIC RESOURCES

The use of mineral resources is essential to the local, regional and national economy as well as to the public use, management, and sustainability of the National Forest. Congress has passed various laws providing for the exploration and development of mineral resources, including oil and gas, on National Forest System lands. Federal mineral resources are divided into two categories: 1) leasable minerals and 2) mineral materials. Leasable minerals are managed in cooperation with the U.S. Department of Interior, and include oil, gas, coal, metallic minerals, and other hardrock leasable minerals. Mineral materials are managed by the USDA Forest Service, and include road aggregate, landscaping rock, rip-rap, and other earthen construction materials. Mineral materials are used to build and maintain trails, roads, campgrounds; to control erosion and sedimentation; to restore riparian and aquatic habitat; to repair flood damage; etc.

The federal government owns the rights to all minerals on about 88 percent of the Forest acreage. Mineral rights on the remaining 12 percent of the Forest acreage are privately owned (either reserved or outstanding mineral rights). Outstanding mineral rights are property rights that were established and separated from the surface estate prior to the government's acquisition of the surface estate. Reserved mineral rights are established when the federal government (in this case the Forest Service) purchases only the surface estate and the mineral estate remains with the seller. The Forest Service, as surface owner, cannot exclude entry by the mineral estate owner, either permanently or for an unreasonable amount of time. The mineral estate owner has the right to make such use of the surface as is reasonably necessary.

Achieving Forest goals for riparian areas, watersheds, forest health, threatened and endangered species, and rare communities requires understanding of biotic and abiotic components of ecosystems. The Forest Plan will integrate biotic and abiotic (geologic processes, structures, and materials) components to better manage all associated resources. The Forest's geologic resources include caves and other karst features; waterfalls; ancient giant landslides; remnants of volcanic eruptions and the Ice Age; unusual landforms like Dragon's Tooth; paleontologic resources (fossils); springs and groundwater; and the geologic foundations of ecosystems. Geologic hazards are geologic processes that may threaten public safety and damage buildings, roads, bridges, trails, dams and other facilities. Geologic hazards include sinkhole collapse, piping, flooding, earthquakes, and a wide range of landslides: rockfalls, rockslides, debris slides, debris flows, slumps, etc. Recognizing that ground-disturbing activities may cause or contribute to geologic hazards such as landslides, this forest-wide direction is designed so management activities will identify, and avoid aggravation of, geologic hazards that may have impacts on resources and public safety.

GOALS AND OBJECTIVES:

GOAL 29 Manage mineral resources to meet demands for energy and non-energy minerals.

OBJECTIVE 29.01 Energy-related Federal leases, licenses, and permits are processed within 120 days.

OBJECTIVE 29.02 For non-energy mineral resources, emphasize authorizations of minerals needed for environmental protection, public infrastructure, flood protection, erosion control, and watershed restoration.

OBJECTIVE 29.03 Reclaim energy and non-energy mineral sites at the appropriate stage of the mineral operation. Identify opportunities for reclamation to achieve post-mine land uses that complement the Desired Condition of the appropriate management prescription.

GOAL 30 On National Forest System tracts where mineral rights are outstanding or reserved, the exercise of private mineral rights to explore and develop mineral resources will be respected.

OBJECTIVE 30.01 Energy-related outstanding and reserved mineral rights operations are processed within 60 days.

GOAL 31 Manage geologic resources to provide multiple public benefits. Manage geologic hazards to protect public safety and facilities while integrating the keystone role of these natural disturbances in riparian and watershed management. Integrate geologic components (processes, structures, and materials) in management of riparian areas, watersheds and ecosystems.

STANDARDS

Geologic Resources

FW-214: Locate and design facilities and management activities to avoid, minimize, or mitigate negative effects on geologic resources with identified values (scientific, scenic, paleontologic, ecological, recreational, drinking water, etc.).

FW-215: Identify, using the appropriate type and scale of geologic mapping, the geologic components (processes, structures, and materials) relevant to proposed projects, and integrate the components into location and design of management activities.

Geologic Hazards

FW-216: Locate, design, and maintain trails, roads, other facilities, and management activities to avoid, minimize, or mitigate potential geologic hazards.

Federal Leasable Minerals - General

FW-217: Following exploration and production operations, the permittee is responsible for reclaiming disturbed sites in accordance with an approved reclamation plan. Reclamation shall meet the requirements of 36 CFR 228. Plans will consider opportunities to enhance the desired future condition of the particular management prescription.

Federal Leasable Minerals - Oil and Gas

FW-218: The Regional Forester makes administratively available and consents to lease those lands on the Forest, which have not been specifically noted as Congressionally withdrawn or administratively unavailable in the management prescriptions listed in Chapter 3. Standard conditions of consent to lease, or stipulations, are used except as noted below and as specified by the individual management prescription. This consent is valid until the Forest Service provides the Bureau of Land Management written notification that consent is being withdrawn or amended.

FW-219: The Regional Forester makes administratively available and consents to lease with a No Surface Occupancy stipulation **semi-primitive non-motorized**, **semi-primitive motorized**, and **semi-primitive 2** areas, which have not been specifically noted as Congressionally withdrawn or administratively unavailable in the management prescriptions, listed in Chapter 3.

FW-220: Operations will comply with environmental protection standards from several sources: Forest Plan standards for the management prescription where the operations will occur; lease terms and conditions; federal Onshore Oil and Gas Orders; Oil and Gas Resources regulations (36 CFR228 E); Conditions of Approval in Applications for Permits to Drill; and Federal and State requirements and regulations promulgated to establish performance standards for protecting soil, water, riparian, and aquatic resources and for reclamation of areas affected by oil and gas activities.

Federal Leasable Minerals - Other than Oil and Gas

FW-221: When not specifically noted in the individual management prescription as Congressionally withdrawn or administratively unavailable, other Federal leasable minerals are available.

Federal Leasable Minerals - Coal

FW-222: Operations will follow Federal and State rules and regulations promulgated to establish performance standards for protecting soil, water, riparian, and aquatic resources and values; and for restoration and reclamation of areas affected by mining activities. Such rules and regulations include requirements for protection of surface and groundwater quantity and quality; prevention and control of acid mine drainage, erosion, and sediment deposition; and protection of streams and hydrologic balance.

Mineral Materials

FW-223: Mineral materials are available for commercial, personal, free, and administrative uses.

Mineral Collection

FW-224: Except for archaeological sites, caves, or in Wilderness, the public can collect small quantities of rocks, minerals, and invertebrate fossils for non-commercial purposes (scientific, educational, and recreational, including recreational gold panning). If such activities would involve motorized

excavation equipment or significant disturbance, then a Permit would be required. Collecting for commercial purposes requires a Permit.

Reserved and Outstanding Minerals

FW-225: The exercise of outstanding rights shall be in accordance with terms of the deed of separation, as well as applicable State and Federal laws and regulations.

FW-226: The exercise of reserved rights shall be in accordance with the deed, the Secretary of Agriculture's rules and regulations within the deed, and applicable State and Federal laws.

FW-227: Management Prescriptions, Management Area Direction, and Forest-wide Direction are subject to outstanding and reserved mineral rights. The government will seek to acquire private mineral rights through purchase, exchange or donation in the following areas: designated Wilderness; designated Wild Rivers; designated Rare Communities and Special Biological Areas. Until such private rights are acquired, the exercise of reserved and outstanding mineral rights to explore and develop mineral resources will be respected.

FW-228: All projects (mineral or non-mineral) or consideration of special designations shall include a review of the status of private mineral rights. Where private rights could be negatively affected, the public involvement process will inform and seek comments from the current owners of private mineral rights. The potential effects on private mineral rights will be assessed.

FW-229: Where reserved or outstanding mineral rights are involved, the mineral owner is encouraged to implement all surface-disturbing activities outside riparian areas.

FACILITIES, ROADS AND ACCESS

Almost all visitors to the Jefferson National Forest use forest roads. Even wilderness areas would be inaccessible without roads leading to trailheads. Roads help determine where people will go and what they will see. Driving for pleasure is the single largest recreational use on the Forest.

The fragmented ownership pattern of the Jefferson means Forest Service System roads are an integral part of the rural transportation system and, conversely, State roads are an integral part of the Forest transportation system. Most of the roads on the Jefferson National Forest were originally constructed for access to recreation sites and for timber harvesting. Many were originally built by the Civilian Conservation Corps (CCC). Currently, these roads and their more recent counterparts serve a variety of needs including recreational access, fire protection, vegetation and wildlife management, adjacent private lands access, and energy and mineral development, to name a few.

A forest-wide Roads Analysis, completed for the Jefferson National Forest in January 2003, informed direction in this Forest Plan. Roads analysis is an on-going process. The transportation inventory is continually updated as roads are constructed, reconstructed, relocated, reclassified, or decommissioned. In sensitive areas, decisions related to roads will be informed by watershed-scale or project-scale roads analysis. These areas are identified in Chapter 3. Roads analysis will be conducted concurrently with watershed analysis in priority watersheds. The Forest Supervisor or District Ranger may also decide to perform a watershed-scale or project-scale roads analysis in other areas based on site-specific conditions or issues.

There are 1,215 miles of inventoried and classified National Forest System (NFS) roads

Table 2-14. Operational Maintenance Level of Forest Roads

Operational Maintenance Level	Miles
1 - Basic Custodial Care (Closed)	96
2 - High Clearance Vehicles	707
3 - Suitable for Passenger Cars	367
4 - Moderate Degree of User Comfort	31
5 - High Degree of User Comfort	1
Decommissioned	13
Grand Total	1,215

within the Jefferson National Forest. These include collector and local roads of various levels ranging from an Operational Maintenance Level (OML) of Basic Custodial Care to High Degree of User Comfort. This also includes 13 miles of recently decommissioned road (decommissioned roads were not tracked in the inventory before 1998).

The majority of road work currently performed on the Forest consists of reconstruction of existing roads. New roads are sometimes required (averages less than 4 miles per year), but typically, existing roads are reconstructed if their location and layout are suitable for the currently existing need and the existing layout provides for minimal risk of resource damage. It is also necessary, at times, to decommission roads that are no longer required. This is desirable as it brings the road bed to a natural condition and eliminates or significantly curtails potential damage to other natural resources. The Jefferson National Forest has been decommissioning about 3 miles of roads per year.

Several roads on the Jefferson National Forest are also used predominantly for other than Forest access. These roads are often used to travel through the Forest from a destination off the Forest to another location, also off Forest. Common examples include work and school commuters who use these roads as shortcut access to jobs or to school locations. In these cases, it is often more desirable to bring the road to minimum State standards and turn the road over to the respective State Departments of Transportation for maintenance. Without exception, the State Departments of Transportation are better equipped and better funded to provide a higher level of maintenance and service for these roads. This maximizes efficiency of application for the limited funding received by the Forest Service for road maintenance and allows for better maintenance of those access routes, which are predominantly used for Forest access. If more than half of the traffic on a road is other than Forest related, that road is considered a candidate for this process. Road rights-of-way across private land are acquired when opportunities exist. Priority is given to existing system roads, which cross private land with no existing right-of-way.

Facilities (other than roads and trails) managed by the Jefferson National Forest include buildings, kiosks, shelters, etc. located on the National Forest, as well as administrative offices, work centers, etc. in nearby towns and cities. These facilities are designed and maintained to incorporate the principles of sustainability, reflect their place within the natural and cultural landscape, and provide optimal service to customers and cooperators.

GOALS AND OBJECTIVES:

GOAL 32 Provide a transportation system that supplies safe and efficient access to roaded portions of the Jefferson National Forest for forest users while protecting forest resources.

OBJECTIVE 32.01 Maintain to standard, a minimum of 75 miles of passenger car roads (OML 3-5) and a minimum of 105 miles of high clearance vehicle (OML 1-2) roads on an annual basis.

OBJECTIVE 32.02 Conduct condition surveys on at least 25% of passenger car roads (OML 3-5) per year. Annually survey a representative sample of high clearance vehicle roads (OML 1-2) to provide for a forest-wide indication of OML 1-2 road conditions.

OBJECTIVE 32.03 Over the next decade, turn over a portion of the 24 miles of forest development roads to the State Department of Transportation, where the majority of traffic is for other than national forest uses.

GOAL 33 Decommission 30 miles of road per decade (classified and unclassified).

OBJECTIVE 33.01 Analyze transportation system within one watershed per year through watershed analysis, and identify roads to be decommissioned. (See also Objective 1.02).

OBJECTIVE 33.02 Priorities for decommissioning are roads causing resource damage and roads in areas where the desired condition is to reduce open road density.

STANDARDS

Access Management

FW-230: All existing open[6] roads and trails should remain open for public travel unless any of the following occurs:

- Use causes unacceptable resource damage;
- The road or trail is unsafe for public use;
- Existing open road density within a management prescription is greater than objective;
- Use conflicts with management prescription or forest-wide direction;
- Closures or restrictions are needed to meet other resource needs.
- Funds will not be available to maintain the road or trail commensurate with Objective Maintenance Level; or
- Public right-of-way does not exist.

[6] "Open" roads are defined as a motorized travelway (including designated motorized trails) used on a regular basis.

FW-231: New construction of local roads are managed as closed to public use unless the following conditions are met:

- Use is compatible with the recreation opportunity for the area;
- Public safety is provided for;
- Road serves an identified public need;
- The area accessed by the road and associated uses can be managed in

accordance with management prescription and forest-wide direction considering available financial and personnel resources; or

- Funds are available for maintenance, or cost-sharing or volunteer maintenance can be arranged.

FW-232: Roads are seasonally or temporarily closed to motorized public use if there is a temporary or recurring need to:

- Prevent unacceptable resource damage;
- Prevent conflicts with the recreational opportunity established for the area;
- Protect property or public safety during resource management activities;
- The facility serves a seasonal or temporary management objective; or
- Reduce the need for additional maintenance associated with damage to the roadbed and/or surface that might occur during adverse weather or seasonal conditions.

Road Construction

FW-233: Roads are designed and constructed to the standard necessary to provide access and manage resources according to management prescription desired conditions and public safety.

FW-234: Use staged revegetation during seeding seasons on construction sites where slopes are greater than 5%.

FW-235: All new and reconstructed roads will blend into the landscape to the extent practical.

FW-236: Road construction is not allowed within Semi-Primitive Motorized or Non-Motorized areas except during an emergency or as subject to valid existing rights and leases. (See standards under Recreation Opportunity Spectrum.)

Road Maintenance

FW-237: Maintenance, reconstruction to a higher standard, or relocation of an existing road is allowed to reduce environmental damage, to improve user safety, or where agreed, to be turned over to the State.

FW-238: Apply the level of maintenance needed to protect the investment, facilitate resource management, and provide for user safety.

Road Decommissioning

FW-239: Closed system roads are planted with native or desirable non-native wildflowers, forbs, shrubs, and/or grasses.

FW-240: Closed system roads and wildlife linear strips may continue to be used for administrative and emergency access.

Facilities

FW-241: Design and maintain facilities to incorporate the principles of sustainability, reflect their place within the natural and cultural landscape, and provide optimal service to customers and cooperators.

FW-243: Before old buildings and other man-made structures are structurally modified or demolished, they will be surveyed for bats. If significant bat roosting is found, maintain these structures or provide alternate roosts suitable for the species and colony size prior to building modification or destruction.

LANDS AND SPECIAL USES

All uses of National Forest System (NFS) lands, improvements, and resources, except those governing the disposal of timber, minerals, and the grazing of livestock are designated "special uses". The predominant use is for public roads and utility rights-of-way. Federal and State highways, utility transmission facilities, and communication sites are essential to local, regional, and national economies. These special uses serve a public benefit by providing for public access, transportation efficiency for commerce, a reliable supply of electricity, natural gas, and water, and a communication network. Generation of power from wind and solar energy may be national forest special uses of the future.

Authorizations for access to private land are special uses, as are military exercises and training. In addition, recreational activities such as outfitting and guiding and competitive events such as fishing tournaments, foot races, horse endurance races, mountain bike races, etc. also fall into the arena of "special uses."

The utility corridors designated as Prescription Area 5C are linear areas 50-1,000 feet wide to accommodate access for maintenance, to facilitate co-location of new utilities, and include all existing utility rights-of-way 50 feet wide and larger under special use permit. Local energy distribution lines are a part of the management area in which they are physically located. Many transmission lines, pipelines, and roads crossing the Jefferson National Forest were in existence prior to acquisition by the Forest Service and are pre-existing rights, not special use permits.

Communication sites are designated as Prescription Area 5B and are usually located on mountain and ridge tops.

The Secretary of Agriculture is authorized to issue permits, leases, and/or easements for transportation and utility rights-of-way and communication uses on National Forest System lands by the Federal Land Policy and Management Act of 1976 (P.L. 94-579), and the Mineral Leasing Act of 1920, as amended (P.L. 66-146).

GOALS AND OBJECTIVES:

GOAL 34 Utility corridors and communication sites on National Forest System lands minimize negative environmental, social, or visual impacts; minimize acres of land affected; are designed using good engineering and technological practices; and clearly benefit society.

GOAL 35 Public lands are easily accessible.

OBJECTIVE 35.01 Acquire right-of-way or fee simple title in lands, as appropriate, to meet access needs.

GOAL 36 National Forest System lands are consolidated to improve management effectiveness and enhance public benefits.

OBJECTIVE 36.01 Through purchase, donation, exchange, right-of-way acquisition, transfer, interchange, and boundary

adjustment, consolidate the National Forest System ownership pattern.

OBJECTIVE 36.02 Acquire lands or interest in lands on a willing seller basis to support specific resource management objectives.

OBJECTIVE 36.03 Exchange or transfer lands or interest in lands that consolidate or provide public benefits.

GOAL 37 Boundary lines are located to Forest Service standards and maintained on a rotational basis.

OBJECTIVE 37.01 Boundary lines are to be surveyed and marked to Forest Service standard, and maintained on a 10-year rotation.

GOAL 38 Resolve all known title claims and encroachments affecting National Forest System lands.

OBJECTIVE 38.01 Title claims and encroachments affecting National Forest System lands are to be documented, prioritized for resolution each fiscal year, and resolved within the constraints of the applicable authority.

STANDARDS

Special Use Authorizations

FW-244: Evaluate new special use authorizations using the criteria outlined in 36 CFR 251.54 and according to Forest Service policy. Limit to needs that cannot be reasonably met on non-NFS lands or that enhance programs and activities. Locate uses where they minimize the need for additional designated sites and best serve their intended purpose. Require joint use on land when feasible.

FW-245: Do not allow recreation residences.

FW-246: Do not authorize new individual well/spring permits. Phase out existing uses when possible, as this is usually a need that can be met on private land.

Linear Rights-of-Way and Communication Sites

FW-247: Develop and use existing corridors and sites to their greatest potential in order to reduce the need for additional commitment of lands for these uses. When feasible, expansion of existing corridors and sites is preferable to designating new sites.

FW-248: Following evaluation of the above criteria, decisions for new authorizations outside of existing corridors and designated communication sites will include an amendment to the Forest Plan designating them as Prescription Area 5B or 5C.

FW-249: Design new towers and ridge top developments to mitigate collision impacts

to migratory birds through coordination of project planning and implementation with the U.S. Fish and Wildlife Service.

FW-250: Locate new communications equipment on existing towers or other structures where possible. Where new tower construction is unavoidable, structures will use minimum safety lights required by the Federal Aviation Administration, daytime visual markers on guy wires, and down-shielded security lighting. At sites that do not currently have towers in excess of 199 feet or those that require lighting, height of new towers will not exceed 199 feet above ground level and/or exceed the height at which the FAA requires that the tower has lighting.

FW-251: Require holders of communication use authorizations to remove communications towers no longer in use or determined to be obsolete.

FW-252: Design new corridors and sites to meet a scenic integrity objective as high as practicable.

FW-253: Specify management requirements for permittee access roads in the designated use permit, where roads are included in the authorization.

FW-254: Place distribution lines for utilities underground, unless the environmental impacts of doing so exceed those of placing them above ground.

Land Adjustment

FW-255: Land acquisitions will be guided by the following criteria:

Priority Acquisitions: (in order of priority)

1. Lands needed for the protection of federally listed endangered or threatened fish, wildlife, or plant species.
2. Lands needed for the protection of significant historical or cultural resources, when these resources are threatened or when management may be enhanced by public ownership.
3. Lands within Congressionally designated wilderness boundaries.
4. Lands that provide an unbroken public right-of-way for the Appalachian National Scenic Trail consistent with the current policy statement for Appalachian Trail acquisition.
5. Lands needed for protection and management of Congressionally designated areas, including wilderness and the Mount Rogers National Recreation Area.
6. Environmentally sensitive lands such as rare communities, wetlands and old growth.
7. Lands that promote more effective management of the ecosystem and reduce administrative expenses through consolidation of national forest system ownership.
8. Lands that enhance recreation opportunities, public access, and protection of aesthetic values.
9. Lands needed to enhance or protect watershed improvements that affect the management of National Forest riparian areas.
10. Consolidation of split estates.

LANDS AND SPECIAL USES

FW-256: When compatible, manage new land acquisitions according to the adjacent or surrounding Management Prescription(s). When not compatible, conduct an environmental analysis and prepare the appropriate decision document to amend this Forest Plan.

FW-257: Land conveyances will be guided by the following criteria. Management Prescription 0B outlines the management of small, isolated land areas in Chapter 3 until they can be conveyed to private ownership.

1. Lands inside or adjacent to communities or intensively developed private land, and chiefly valuable for non-National Forest System purposes.

2. Parcels that will serve a greater public need in state, county, city, or other Federal agency ownership.

3. Inaccessible parcels isolated from other National Forest System lands. Parcels intermingled with private lands.

4. Parcels within major blocks of private land, the use of which is substantially for non-National Forest System purpose.

5. To support more efficient management, parcels having boundaries, or portions of boundaries, with inefficient configurations (projecting necks or long, narrow strips of land, etc.)

6. Parcels that have substantial structural improvements that are authorized under a special use permit/lease if overall goals and objectives can be met.

Right-of-Way Acquisition

FW-258: Access should be acquired through purchase or exchange from other agencies, states, counties, and private interests to assure management objectives are met for all ownerships.

MANAGEMENT PRESCRIPTIONS

CHAPTER 3

INTRODUCTION

The 1985 Land and Resource Management Plan for the Jefferson National Forest included specific direction on how to manage different land areas. These land areas were called management areas. This revised plan also contains management areas, but they are now related to ecological regions, watershed boundaries, and other biological, and social divisions of land found across the Jefferson National Forest. These new management areas are described in Chapter 4.

Each management area has different attributes that require a slightly different management emphasis. These differences are reflected in the management prescriptions applied to each area. Management prescriptions related to one another are grouped in "categories," numbered 0 through 12. The numbering system and emphasis of each management prescription is consistent across the national forests of the southern Appalachians. This Chapter only includes management prescriptions used in the Revised Forest Plan; therefore, there are gaps in the numbering sequence. A complete list of management prescriptions used throughout the southern Appalachians, along with their related emphasis, is available in *Process Paper: Management Prescriptions of the Southern Appalachians.*

All management prescriptions provide multiple uses, even though their titles may imply a single use. Each management prescription includes:

Title – tells the primary focus of management.

Emphasis – briefly describes this primary focus of management for the prescription area in a little more detail.

Desired Condition – shows opportunities and/or conditions available in the future for all the multiple uses and resources found throughout the prescription area.

Standards – provides managers specific management direction as they work toward achieving the desired condition for each particular area.

Table 3-0 on the next page lists each of the management prescriptions, their total acres of national forest system lands, the percent of the Jefferson National Forest allocated to each individual management prescription, and the acres of lands suitable for timber production within each management prescription.

Table 3-0. Summary of Management Prescriptions on the Jefferson National Forest.

Management Prescription	Total Acres on Jefferson National Forest	Percent of Total Jefferson National Forest Acres	Acres of Lands Suitable for Timber Production	Management Prescription	Total Acres on Jefferson National Forest	Percent of Total Jefferson National Forest Acres	Acres of Lands Suitable for Timber Production
0B	3,500	<1%	0	7D	6,000	1%	0
1A	57,800	8%	0	7E1	19,600	3%	0
1B	25,200	3%	0	7E2	51,800	7%	36,200
2C1	900	<1%	0	7F	3,900	1%	1,300
2C3	4,400	1%	0	7G	3,700	1%	0
4A	30,700	4%	0	8A1	112,600	16%	85,600
4C1	1,500	<1%	0	8B	19,600	3%	13,200
4D	4,700	1%	0	8C	57,300	8%	40,600
4E1a	200	<1%	0	8E1	16,000	2%	11,500
4E1b	1,500	<1%	1,000	8E2a	2,400	<1%	0
4F	1,000	<1%	0	8E2b	5,300	1%	4,100
4J	3,900	1%	1,900	8E4a	900	<1%	0
4K1	5,200	1%	1,500	8E4b	8,800	1%	6,400
4K2	4,400	1%	0	8E6	1,300	<1%	400
4K3	5,100	1%	0	9A1	19,200	3%	12,800
4K4	5,100	1%	0	9A2	<100	<1%	
4K5	4,200	1%	0	9A3	1,700	<1%	500
4K6	5,500	1%	0	9A4	6,500	1%	0
5A	200	<1%	0	9F	7,400	1%	0
5B	200	<1%	0	9G1	100	<1%	0
5C	3,700	1%	0	9H	24,700	3%	12,900
6A	300	<1%	0	10B	16,200	2%	11,600
6B	800	<1%	0	11	(73600)	10%	0
6C	30,200	4%	0	12A	9,700	1%	0
7A	1,800	<1%	0	12B	91,300	13%	0
7B	23,500	3%	17,000	12C	9,800	1%	0
7C	1,500	<1%	400	**TOTAL**	**723,300**		**258,900**

0B CUSTODIAL MANAGEMENT - SMALL, ISOLATED LAND AREAS

This management prescription is allocated to approximately 3,500 acres (<1%) across the Jefferson National Forest.

EMPHASIS:

These areas are managed at a minimum level prior to disposal or land exchange. No expenditures are involved except those required by law, to fix environmental problems, or to protect human health or safety. No resource is emphasized.

DESIRED CONDITION:

These areas are generally surrounded by private lands and not accessible by the public. There are no developed recreation areas. Adjacent private landowners control access to the limited dispersed recreation opportunities found in these areas. The desired future condition of these tracts is conveyance to private ownership.

These areas retain a natural, forested appearance shaped primarily by natural processes until conveyance. These natural appearing landscapes feature a structurally diverse, multi- aged forest community under a continuous forested canopy, with the exception of occasional gaps created by storms, insects, diseases, or fire. Infrequent pastoral and historic/cultural enclaves may also exist.

These areas do not contain rare communities, or threatened, endangered, or sensitive species habitat. No particular forest successional stage is emphasized. Other than inventory work prior to conveyance, no investments are made in wildlife, fisheries, recreation, or scenery.

STANDARDS

General

0B-001 These tracts of land are identified as available for trade.

0B-002 Limit land and resource management investments and activities to resource inventories, location and marking of boundaries, and the specific items mentioned in the following standards.

0B-003 If threatened, endangered, sensitive, or locally rare species, a rare community, or significant heritage resources are found within an area; it will no longer be available for disposal.

Water, Soil, and Air

0B-004 Watershed restoration needs are completed prior to conveyance.

Vegetation and Forest Health

0B-005 Only control insect and disease outbreaks to prevent damage to resources on adjacent land; or where needed for safety or legal reasons.

0B-006 Allow salvage of dead, dying, and damaged trees only for fuels reduction, pest management, or public safety reasons.

Timber Management

0B-007 These lands are unsuitable for timber production.

Wildland Fire Suppression

0B-008 Lightning fires are generally suppressed to minimize acreage burned due to the proximity of private lands.

Scenery

0B-009 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

Minerals

0B-0010 These areas are available for Federal oil and gas with a No Surface Occupancy stipulation. Other Federal mineral leases are allowed on a case-by-case basis. Allow existing Federal leases to continue until expiration. Do not reauthorize. Allow roads, pipelines, utilities, and other facilities per existing Federal leases.

0B-011 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed.

Roads

0B-012 Road construction is generally prohibited, subject to valid existing rights or leases. Limit road reconstruction and/or decommissioning, including betterment and relocation, to (a) improvement of soil and water, (b) maintenance of existing special uses and mineral leases, (c) access to private rights, and (d) protection of property or public safety.

0B-013 Road construction, reconstruction, and decommissioning are informed by a watershed-scale or site-specific road analysis.

Lands and Special Uses

0B-014 When considering new special use authorizations, evaluate the effect of additional encumbrances on these tracts. Encourage proponent to trade this tract for another.

1A DESIGNATED WILDERNESS

Congress has designated eleven wilderness areas on the Jefferson National Forest: James River Face, Thunder Ridge, Barbours Creek, Shawvers Run, Mountain Lake, Peters Mountain, Kimberling Creek, Beartown, Little Dry Run, Little Wilson Creek, and Lewis Fork. These areas encompass 57,645acres (8%) of the Jefferson National Forest and 115 acres on the George Washington National Forest.

EMPHASIS:

The emphasis is to allow ecological and biological processes to progress naturally with little to no human influence or intervention, except the minimum impacts made by those who seek the wilderness as a special place offering opportunities to experience solitude and risk in as primitive surroundings possible.

DESIRED CONDITION:

1A DESIGNATED WILDERNESS

The Wilderness Act of 1964 describes wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed to preserve its natural conditions. Wilderness generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable. It has outstanding opportunities for solitude or a primitive and unconfined type of recreation. It 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, it may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value."

These areas retain a natural evolving landscape character shaped primarily by natural processes. These landscapes feature a structurally diverse older aged forest community with a continuous forested canopy, with the exception of occasional gaps created by storms, insects, diseases, or fire. The valued character of these landscapes is intact with no deviations.

By the year 2064, visibility will return to natural conditions as mandated by EPA's Regional Haze Regulation and Clean Air Act Amendments of 1977. Land managers interact with regional consortia of states (e.g., Visibility Improvement States and Tribal Association of the Southeast) to improve visibility conditions in the James River Face Wilderness, a Class I area. Visibility improves incrementally during this planning period as the Regional Haze Regulation is implemented (US EPA, 1997).

Natural processes will eventually result in a large patch of late successional to old growth forest matrix dominated by shade tolerant hardwoods and white pines throughout most of this area. Rare communities and associated species not dependent upon disturbance will continue to exist. Disturbance dependent communities will decline across this prescription area, and be confined to small brushy and herbaceous gaps and occasional large openings from natural disturbance events. Insects and diseases, primarily gypsy moth, hemlock woolly adelgid, oak decline, and southern pine beetle, play a major role in shaping future species composition and successional stages across these areas. Non-native vegetation occurs only as transients and is not self-perpetuating. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Wildlife species associated with area-sensitive mid- to late-successional forest habitats that are expected to inhabit this area include: ovenbird; cerulean warbler; black-billed cuckoo, and Swainson's warbler. Management of the area is focused on protecting and preserving the natural environment from human influences. Timber harvest is not appropriate within this prescription area. Wildland fires may be used to restore and maintain the historic fire regime. Prescribed fire may be used to reduce the risks and consequences of wildland fire escaping from the area. Integrated pest management favoring biological controls may be used to eradicate or suppress non-native invasive pests. Non-commercial felling of trees with hand tools may be used to construct and maintain trails.

Recreation management is designed to provide solitude and remoteness in the most primitive and natural recreation setting possible. To this end, access to the area is limited. Trailheads at surrounding roads are designed with sensitivity to scale and character to set the tone for experiencing a primitive recreation experience. Once in the designated wilderness, visitors on foot or horseback must rely, to varying degrees, on their own personal physical abilities and primitive recreation skills. Wilderness recreation includes inherent risks. Visitors are isolated from the sights and sounds of others and encounters

1A DESIGNATED WILDERNESS

with other visitors are rare. Travel within wilderness is strictly non-motorized.

Most visitor information is dispensed outside of the wilderness at trailheads and through off-site public information and education efforts. Wilderness visitors are encouraged to "pack-it-in and pack-it-out" and to "leave no trace." Wilderness trails lie lightly on the land, typically narrow footpaths or horse trails with minimum directional signing that blends well with the natural surroundings. Visitors are physically challenged as they ford streams and climb over downed trees.

Very few facilities are provided. Permanent human-made shelters may be present if they existed prior to wilderness designation, particularly along the Appalachian National Scenic Trail. Construction of new shelters on new sites within wilderness is not appropriate, unless there is an obvious and overriding need to protect the natural resources from visitor impacts. Structures including signs, bridges, waterbars, and constructed water sources for the comfort or convenience of visitors in wilderness are minimal. The few structures appearing in wilderness are generally for the protection of resources or were present prior to wilderness designation.

The Federal Government owns the lands within the boundaries of designated wilderness areas, both surface and subsurface, with no encumbrances.

James River Face Wilderness - Virginia's first congressionally designated wilderness

STANDARDS

General

1A-001 Motorized transport or mechanized equipment is not allowed, except in emergencies. All such uses require advance approval. See specific exceptions in the standards under Fire, Law Enforcement, Recreation, Appalachian Trail, and Forest Health.

Water, Soil, and Air

1A-002 Maintain soils in a natural undisturbed state, except for approved watershed restoration projects, wildland fire control measures, campsite rehabilitation, and trail construction, use, and maintenance. Favor natural healing of disturbed sites.

1A-003 Allow mitigation for acid rain and other pollution effects and evaluate on a case-by-case basis with Regional Forester approval.

Terrestrial and Aquatic Species

1A-004 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are not maintained, and succeed to forest, deteriorate over time, or are removed. New permanent wildlife openings are not created.

1A-005 Allow stocking only to reestablish or maintain indigenous, threatened, endangered, or sensitive species with Forest Supervisor authorization.

Threatened, Endangered, And Sensitive Species

1A-006 Within the Peaks of Otter salamander habitat conservation area, activities in the Thunder Ridge Wilderness Area must comply with the Habitat Conservation Agreement for Peaks of Otter salamander. See Management Prescription 8E2 for Peaks of Otter salamander habitat conservation area management direction.

Throughout this document, references to the Peaks of Otter salamander habitat conservation area includes both primary (8E2a) and secondary (8E2b) habitat and the applicable standards will be followed.

Rare Communities and Old Growth

1A-007 Rare communities are only maintained through natural processes, with the exception of appropriate management associated with threatened, endangered, sensitive, or locally rare species.

Vegetation and Forest Health

1A-008 Forest insect and disease outbreaks are controlled only if necessary to prevent unacceptable damage to resources on adjacent land, prevent an unacceptable loss to the wilderness resource due to non-native pests, or protect threatened, endangered, and sensitive species.

1A-009 Use control measures that have the least adverse impact on the wilderness resource. Favor biological control methods.

1A-010 Actions to control Insects and diseases may be approved by the Regional Forester under the following conditions:

- There is an immediate threat of unnacceptable damage to resources outside the wilderness boundary and the threat cannot reasonably be abated by control actions taken outside the wilderness boundary; or
- There is an immediate threat of unnatural loss of the wildernness resource due to a non-native insect or disease.

1A-011 Eradicate non-native invasive plants when the infestations are isolated. Use hand-applied chemicals, with Regional Forester approval, when necessary.

1A DESIGNATED WILDERNESS

Timber Management

1A-012 These lands are classified as withdrawn from timber production. Timber harvest is not allowed.

Non-timber Forest Products

1A-013 Do not issue authorizations for the commercial use of any forest products.

1A-014 Allow personal-use collection of dead and down wood only for on-site campfire use.

1A-015 Allow personal-use collection of non-timber forest products (nuts, berries, pinecones, etc.), provided they are not threatened, endangered, sensitive or locally rare.

Wildland Fire Suppression

1A-016 Use Minimum Impact Suppression Tactics (MIST) which employ suppression methods and equipment that cause the least alteration of the wilderness landscape, least disturbance of the land surface, least disturbance to visitor solitude, least reduction of visibility during periods of visitor use, and least effects on air-quality-related values.

Prescribed Fire and Wildland Fire Use

1A-017 Management-ignited prescribed fire is allowed to reduce a buildup of fuels to an acceptable level and to decrease the risks and consequences of wildland fire escaping from wilderness.

1A-018 With an approved fire plan, wildland fire use is allowed to permit lightning-caused fires to play, as nearly as possible, their natural ecological role.

1A-019 With the exception of firelines, only allow rehabilitation of a burned area if necessary to prevent an unacceptable loss of wilderness resources or to protect resources outside the wilderness. Do necessary revegetation work with plant species native to the wilderness area.

Recreation

1A-020 Wilderness areas are managed for the Primitive Recreation Opportunity although actual ROS classes range from Semi-Primitive Non-Motorized (SPNM), to Semi-Primitive 2 (SP2). See ROS Map.

1A-021 Construct, relocate, and maintain trails to the minimum standard necessary for protection of the soil, water, vegetation, visual quality, user safety, and long-term maintenance. Emphasize trails that appear to be part of the wilderness environment and not an intrusion upon it.

1A-022 Blazing of trails is allowed only on the Appalachian Trail.

1A-023 Use of hand-held power tools, like chainsaws, to reopen trails following catastrophic natural events may be authorized by the Regional Forester.

1A-024 Minimize use of trail bridges or foot logs. Bridges are not installed for user convenience. Construct bridges if necessary for wilderness resource protection or for safety reasons. Design bridges to minimize impact on the wilderness resource. Select locations that minimize the size and complexity of the structure.

1A-025 Provide the minimum number of signs for the regulation or information of the user and the protection of the wilderness resource. Do not include distances to destination points on trail signs or directional arrows within the wilderness. Encourage use of trail maps.

1A-026 Groups entering the wilderness will not exceed 10 persons.

Appalachian Trail

1A-027 Plan and carry out activities in cooperation with appropriate Appalachian Trail management partners.

1A-028 Horse and pack stock are prohibited on the Appalachian Trail footpath.

1A-029 Existing Appalachian Trail shelters and associated facilities may be maintained. When existing trail shelters deteriorate to the point that they must be replaced or reconstructed, analyze the shelter location. When possible, relocate shelters to appropriate sites outside of wilderness.

Scenery

1A-030 Management activities such as trail construction, maintenance, and signing are designed to meet or exceed a very high scenic integrity objective.

1A-031 Non-historical remnants such as old railroad ties and culverts causing unacceptable visual impact are removed.

Range

1A-032 Livestock grazing is not permitted unless specifically authorized in the designating legislation.

Minerals

1A-033 These areas are withdrawn from Federal oil and gas and other Federal mineral leases. Allow existing Federal leases to continue until expiration. Do not reauthorize. Allow roads, pipelines, utilities, and other facilities per existing Federal leases.

1A-034 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the wilderness itself; and b) use is necessary to protect the wilderness resource.

1A-035 Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible. (See also standards under Lands).

Roads

1A-036 Do not permit road construction and reconstruction, subject to valid existing rights or leases.

1A-037 Favor natural revegetation of closed roads. Plant with native species only if the area is not expected to revegetate naturally in a reasonable time.

Lands and Special Uses

1A-038 Within Mountain Lake Wilderness, provide adequate access to private land owner(s), and their successors in interest. Pursue the purchase or exchange of these tracts. Within one year of acquisition of the private tracts within Mountain Lake Wilderness and associated road right-of-way, motorized equipment may be used to remove structures, restore the area, and decommission the road.

1A-039 Wilderness areas are not available for new special uses, except for research and outfitter-guide operations allowed under the Wilderness Act. Phase out existing non-conforming uses.

1A DESIGNATED WILDERNESS

1B RECOMMENDED WILDERNESS

1A-040 Allow commercial use by outfitters and guides if compatible with preservation of the wilderness values. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

1A-041 Limit the size of commercial and organized groups to 10.

Research and Monitoring

1A-042 Evaluate research proposals and scientific studies for which use of a wilderness is essential. Allow research that is compatible with wilderness management objectives.

1A-043 Allow collection of specimen plants for research with Forest Supervisor authorization.

Law Enforcement and Search and Rescue

1A-044 The county or counties where the wilderness areas are located have the responsibility for search and rescue of lost or injured visitors. Forest personnel will provide assistance when requested for such things as scouting services, detailed maps, aerial photography, and detailed information about the area.

1A-045 Require Forest Supervisor approval for motorized equipment for search-and-rescue and law enforcement operations within the wilderness area in advance. Use of motorized equipment is limited to emergencies involving inescapable urgency such as: (a) health and safety, (b) law enforcement involving serious crimes or fugitive pursuit, (c) removal of deceased persons, and (d) aircraft accident investigation.

1B RECOMMENDED WILDERNESS STUDY AREA

Areas on the Jefferson National Forest recommended to Congress for wilderness study include: Little Wolf Creek, Garden Mountain, Cave Springs, Little Wilson Creek Wilderness Addition A and B, Stone Mountain (addition to Little Wilson Creek Wilderness), Helton Creek (addition to Lewis Fork Wilderness), Kimberling Creek Wilderness Additions A and B, Peters Mountain Wilderness Additions A, Mountain Lake Wilderness Additions A, B, and C, Shawvers Run Wilderness Addition, and James River Face Wilderness Addition. These areas total 25,200 acres (3%) across the Jefferson National Forest.

EMPHASIS:

These areas are managed to protect their wilderness characteristics pending legislation as to their classification and provide for existing uses where compatible with protecting wilderness character.

DESIRED CONDITION:

The desired condition for the wilderness resources and recreation opportunities in this area is the same as described in 1A above. Removal and restoration of human influences may occur. Purchase of reserved and outstanding mineral rights is in process. Timber harvest is not appropriate within this prescription area. This type of management is to continue until Congress decides whether to include the area in the national wilderness preservation system.

STANDARDS

General

1B-001 These areas are managed as wilderness pending final Congressional action. Standards for 1A apply except where otherwise noted below. In 1B, the Forest Supervisor approves items requiring Regional Forester approval in 1A

1B-002 Allow motorized equipment for needed restoration work prior to congressional designation as wilderness.

Timber Management

1B-003 These areas are classified as unsuitable for timber production, pending final Congressional action. Timber harvest is not appropriate.

Wildland Fire Suppression

1B-004 Allow rehabilitation of firelines and the burned area to prevent an unacceptable loss of future wilderness resources or to protect resources outside the area. Do necessary revegetation work with plant species native to the wilderness area. Evidence of firelines is obliterated as soon as practicable.

Prescribed Fire and Wildland Fire Use

1B-005 Management-ignited prescribed fire and wildland fire use are allowed to reduce a buildup of fuels, to restore native forest communities, to maintain threatened, endangered, sensitive, and locally rare species habitat, and to decrease the risks and consequences of wildland fire escaping from the area.

1B-006 Allow rehabilitation of firelines and the burned area to prevent an unacceptable loss of future wilderness resources or to protect resources outside the area. Do necessary revegetation work with plant species native to the wilderness area. Evidence of firelines is obliterated as soon as practicable.

Recreation

1B-007 Decommission facilities that are not compatible with a wilderness environment.

Minerals

1B-008 These areas are administratively unavailable for federal oil and gas and other federal mineral leases, pending final Congressional action. Allow existing Federal leases to continue until expiration. Do not reauthorize. Allow roads, pipelines, utilities, and other facilities per existing Federal leases.

1B-009 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed.

1B-010 Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted.

Roads

1B-011 Do not permit road construction and reconstruction, subject to valid existing rights or leases.

1B-012 Decommission all roads. Motorized equipment use is allowed to decommission roads. Prior to decommissioning, manage all roads as closed.

2C1 ELIGIBLE WILD RIVERS

2C1 ELIGIBLE WILD RIVERS

Three miles of Roaring Branch on the Clinch Ranger District were identified as eligible to be considered for designation as part of the National Wild and Scenic Rivers System. This management prescription contains approximately 900 acres (< 1%). Roaring Branch has private subsurface mineral rights. The outstandingly remarkable values of this eligible river will be protected to the extent possible; however, these private mineral rights are acknowledged and reasonable access to develop these rights are granted.

EMPHASIS:

The primary emphasis along Roaring Branch and its associated corridor is to protect and enhance the outstandingly remarkable scenic and geologic values as well as perpetuating the undeveloped setting and non-motorized access that led to the “wild” classification, subject to valid rights. Roaring Branch will be preserved in a free-flowing condition for the benefit, use, and enjoyment of present and future generations.

DESIRED CONDITION:

Roaring Branch represents vestiges of primitive America. The surrounding corridor is an excellent example of how bedrock structure and geologic processes can control the development of a stream and the landscape of a watershed. The headwaters of Roaring Branch falls rapidly through a gorge with steep rock faces and old growth hemlock with a rhododendron understory.

These areas retain a natural evolving landscape character shaped primarily by natural processes, although the Roaring Branch trail has a historic/cultural landscape character due to the Civilian Conservation Corps trail work. These landscapes feature a structurally diverse older aged forest community with a continuous forested canopy, broken only by the linear swath of the river. Understory plants, particularly rhododendron and edge-favoring, small flowering trees such as silverbell, dogwood and redbud, provide a lush vegetative understory visible from the river and trail. The valued character of these landscapes is intact with no deviations.

Natural processes maintain the large patch of old growth forest currently dominated by shade tolerant hemlocks. Insects and diseases, primarily hemlock woolly adelgid, play a major role in shaping future species composition and successional stages. Non-native vegetation occurs only as transients and is not self-perpetuating. Cavity trees, cull trees, standing dead trees, and down logs are common as a result of natural mortality.

Recreation management is designed to provide solitude and remoteness in the most primitive and natural recreation setting possible. To this end, access to the area is limited to roads outside of the corridor, except reasonable access necessary to exercise development of private mineral rights. Trailheads at perimeter roads are designed with sensitivity to scale and character to set the tone for a primitive experience. Motorized recreation and mountain bikes are not compatible in this area. Wild river corridor recreation includes inherent risks. Visitors are isolated from the sights and sounds of others and encounters with other visitors are rare.

The majority of this prescription area is managed as semi-primitive non-motorized. Once in the designated wild river corridor, visitors hiking or fishing must rely, to varying degrees, on their own personal physical abilities and primitive recreation skills. The Stone Mountain Trail will continue as the only access to this area and is maintained to accommodate use and access while protecting the resources and values of Roaring Branch. Signs are designed to complement the natural environment in scale, character, and color. Most visitor information is provided outside of the wild river corridor at

trailheads and through off-site public information and education efforts. Wild river visitors are encouraged to "pack-it-in and pack-it-out" and to "leave no trace."

Commercial timber harvest is not appropriate within this prescription area. Wildland fires may be used to restore and maintain the historic fire regime. Integrated pest management favoring biological controls may be used to eradicate or suppress non-native invasive pests. Non-commercial felling of trees may be used to construct and maintain trails.

Roaring Branch is underlain by private mineral rights. At some point in the future, it is possible that roads, wells, and other necessary infrastructure associated with these rights may be observed within the area if reasonable access cannot be provided outside of this prescription area.

STANDARDS

General

2C1-001 Travel in this river corridors is non-motorized only, except in emergency situations or to access valid existing rights or leases. All such uses require advance approval. Chainsaw use for trail maintenance is allowed.

2C1-002 All management activities within this corridor must be compatible with the outstandingly remarkable values for the River.

Water, Soil, and Air

2C1-003 Maintain soils in a natural undisturbed state, except for approved watershed restoration projects, wildland fire control measures, campsite rehabilitation, and trail construction, use, and maintenance. Favor natural healing of disturbed sites.

2C1-004 Instrumentation necessary for monitoring reference watershed conditions is allowed. Such instrumentation is designed to be unnoticeable to visitors.

2C1-005 Evaluate existing soil or water structural improvements to determine if continued use is compatible with outstandingly remarkable values. If compatible, schedule maintenance needs and methods. If incompatible allow to deteriorate naturally.

2C1-006 Allow mitigation for acid rain and other pollution effects and evaluate on a case-by-case basis with Forest Supervisor approval.

Terrestrial and Aquatic Species

2C1-007 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are not maintained, and succeed to forest, deteriorate over time, or are removed. New permanent wildlife openings are not created.

2C1-008 Allow stocking only to reestablish or maintain indigenous, threatened, endangered, or sensitive species with Forest Supervisor authorization.

Rare Communities and Old Growth

2C1-009 Rare communities are maintained through natural processes, with the exception of appropriate management associated with threatened, endangered, sensitive, or locally rare species.

2C1-010 A large patch of inventoried old growth exists within this corridor and is maintained primarily by natural processes. Integrated pest management to control hemlock woolly adelgid within this patch is allowed.

Vegetation and Forest Health

2C1-011 Suppression, eradication, and Slow the Spread actions to control **gypsy moth** infestations are allowed.

2C1-012 Actions to eradicate or suppress **hemlock woolly adelgid** infestations are allowed.

2C1-013 Eradicate non-native invasive plants when the infestations are isolated. Use hand-applied chemicals, with Forest Supervisor approval, when necessary.

2C1-014 Felling and leaving of individual trees is allowed for public safety and trail maintenance within appropriate trail clearing limits.

Timber Management

2C1-015 These lands are classified as unsuitable for timber production. Timber harvest is not allowed unless associated with reasonable access to valid existing rights.

Non-timber Forest Products

2C1-016 Do not issue authorizations for the commercial or personal use of any forest products.

Wildland Fire Suppression

2C1-017 Use suppression methods and equipment that cause the least alteration of the outstandingly remarkable values, least disturbance of the land surface, least disturbance to visitors, least reduction of visibility during periods of visitor use, and least effects on air-quality-related values.

2C1-018 Tractor-plow units or bulldozers are allowed, with Forest Supervisor approval, only on fires with an imminent threat to life or private property that cannot be controlled by other means. Evidence of such use is obliterated as soon as practicable.

Prescribed Fire and Wildland Fire Use

2C1-019 Management-ignited prescribed fire is allowed to reduce a buildup of fuels to an acceptable level and to decrease the risks and consequences of wildland fire escaping from the river corridor. Prescribed fire can also be used for control of non-native pests and to create, enhance or maintain threatened, endangered, sensitive and locally rare species habitat necessary to perpetuate these flora or fauna.

2C1-020 With an approved fire plan, wildland fire use is allowed to permit lightning-caused fires to play, as nearly as possible, their natural ecological role.

2C1-021 Do necessary revegetation work with plant species native to the river corridor.

Recreation

2C1-022 Eligible Wild River corridors are managed with the most primitive Recreation Opportunity Spectrum (ROS) possible from Semi-Primitive Non-Motorized (SPNM), to Semi-Primitive 2 (SP2). See ROS Map.

2C1-023 Restore existing trail including steps and bridges, when necessary, using native materials and Civilian Conservation Corps construction techniques.

2C1-024 Provide the minimum number of signs for the regulation or information of the user and the protection of the outstandingly remarkable values. Do not include distances to destination points on trail signs or directional arrows within the river corridor. Encourage use of trail maps.

Scenery

2C1-025 Management activities; such as trail construction, maintenance and signing are designed to meet or exceed a **very high** scenic integrity objective.

Range

2C1-026 Livestock grazing is not permitted.

Minerals

2C1-027 The entire Roaring Branch watershed is underlain by private mineral rights. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible. (See also standards under Lands).

2C1-028 These areas are not available for mineral materials for commercial, personal use, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the river corridor itself; and b) use is necessary to protect the outstandingly remarkable values of the river.

Roads

2C1-029 Do not permit road construction and reconstruction, subject to valid existing rights or leases.

Lands and Special Uses

2C1-030 These corridors are unsuitable for new special uses, except for research and outfitter-guide operations. Phase out existing non-conforming uses.

2C1-031 Allow commercial use by outfitters and guides if compatible with preservation of the outstandingly remarkable values. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

2C1-032 Limit the size of commercial and organized groups to 10.

2C3 ELIGIBLE RECREATIONAL RIVERS

The rivers shown in Table 2-12 were found to be eligible for consideration as potential Wild and Scenic Rivers with a Recreational Classification. Little Stony on the New River Valley Ranger District, the Clinch River, the Guest River, and Little Stony on the Clinch Ranger District are allocated to this management prescription. This management prescription contains approximately 4,400 acres (<1%). The outstandingly remarkable values of all eligible rivers will be protected regardless of their management prescription allocation.

EMPHASIS:

These river segments and their associated corridors are eligible to be a part of the National Wild and Scenic Rivers System. They are managed to protect and perpetuate the outstandingly remarkable values that led to their eligibility status and classification as "recreational."

2C3 ELIGIBLE RECREATIONAL RIVERS

DESIRED CONDITION:

The primary emphasis for management of the river and river corridor is to protect and enhance the outstandingly remarkable values of that river or river segment. The recreational river corridor provides outstanding opportunities for people to enjoy a wide variety of river oriented recreation opportunities in an attractive setting. The river is readily accessible by roads and may be accessed by railroads as well. Transportation facilities may parallel the river for long stretches.

There is a low need for visitors to rely on their personal physical abilities and primitive recreation skills within these areas. The sights and sounds of other visitors are evident, and opportunities to encounter other visitors are moderate to high. Visitors seeking solitude may find that difficult to achieve, particularly in peak use seasons. Trails may be highly developed, including hardened trails for a high level of accessibility for persons of all abilities. Motorcycles and/or all-terrain vehicles may be permitted on designated trails.

The landscape character ranges from natural appearing to transitional-mixed use. There is substantial evidence of human activity along the shores of these rivers on adjoining private lands, sometimes including modern residential development, commercial structures, and a full range of various agricultural and forestry uses. On National Forest System lands, visitors enjoy a natural-appearing setting with a range of man-made recreational developments. Prescribed fire, felling and removal of trees, domestic livestock grazing, and integrated pest management activities may be observed. Utility transmission corridors, communication facilities, or signs of mineral development activity associated with reserved and outstanding mineral rights may be observed as well as controlled mineral activities under lease and use of mineral materials. The goal is to blend these uses into the background so that they remain visually subordinate to the natural landscape. Existing scenic integrity may range from high to very low, but the objectives on National Forest System lands are moderate or higher.

Since there is the potential for large numbers of visitors at peak use seasons, regulations are necessary for protection of resources and visitors. Information is provided at bulletin boards or kiosks at the river, as well as at off-site Forest Service visitor centers and in brochures. Visitors are encouraged to practice minimum impact techniques while recreating. Trash receptacles may be provided at parking areas and high use areas. Facilities of a modern nature are present to provide for visitor safety and comfort and to protect the river resources. Facilities are designed to fit the character of the specific sites where they are located. This could range from semi-primitive to rural. Facilities might include parking areas, trailheads, bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, etc.

These areas are characterized by a predominance of mid- and late-successional forests with a high to intermediate tolerance to shade. Forest structure varies according to ecological factors, but largely consists of a mature overstory of hardwoods, occasionally mixed with pines, a fairly open midstory, and a well-developed herbaceous and shrubby understory. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities may be enhanced through commercial and non-commercial vegetation management activities. Understory vegetation includes a variety of native deciduous and evergreen flowering trees, shrubs and wildflowers. Even- and uneven-aged forest communities are managed throughout the area, along with continued development of medium and small patches of late successional to old growth forest communities. Wildlife viewing opportunities are maintained and expanded and up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the outstandingly remarkable values of the river corridor. Management activities and controls ensure rare communities and associated species continue to exist in the area.

STANDARDS

General

2C3-001 All management activities within this corridor must be compatible with the outstandingly remarkable values for the River.

Terrestrial and Aquatic Species

2C3-002 Allow creation of up to four percent early-successional forest habitat.

2C3-003 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

2C3-004 All large, medium, and small old growth patches are maintained within these corridors.

Vegetation and Forest Health

2C3-005 Allow salvage of dead, dying, or damaged trees to maintain or enhance outstandingly remarkable values.

2C3-006 Allow vegetation management activities to:

- Maintain or enhance outstandingly remarkable values of the river corridor;
- Enhance or rehabilitate scenery;
- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Maintain, enhance, or restore the diversity and complexity of native vegetation;
- Suppress or control insect and disease outbreaks;
- Control non-native invasive vegetation;
- Reduce fuel buildups; or
- Provide for public health and safety.

2C3-007 Aggressively control insect and disease outbreaks when threatening the outstandingly remarkable values of the river corridor or when needed for safety or legal reasons. Consider eradication of recently established non-native pests. Favor the most effective control method.

Timber Management

2C3-008 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

Wildland Fire Suppression

2C3-009 Lightning fires are generally suppressed to minimize acreage burned due to

high levels of public use and infrastructure investments in these corridors.

Prescribed Fire and Wildland Fire Use

2C3-010 Vegetation management may be accomplished with management-ignited prescribed fire and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

2C3-011 These corridors are unsuitable for designation of new ATV routes or use areas. Allow designated routes for licensed OHVs only.

Scenery

2C3-012 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

Minerals

2C3-013 These corridors are available for federal oil and gas leasing with controlled surface use to protect the outstandingly remarkable resources of the river. Other Federal minerals may be available on a case-by-case basis.

2C3-014 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the outstandingly remarkable resources of the river corridor.

2C3-015 Some of these areas are underlain by private mineral rights. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to protect outstandingly remarkable values when possible.

Roads

2C3-016 Road construction, reconstruction, and decommissioning are informed by a watershed-scale or site-specific road analysis considering effects on the outstandingly remarkable values.

2C3-017 Allow road construction or reconstruction to improve recreational access, improve soil and water, to salvage timber, or to protect property or public safety.

2C3-018 Decommission roads that are causing environmental damage, degrading outstandingly remarkable values, or to manage visitor use and access.

Lands and Special Uses

2C3-019 These areas are suitable for new utility structures, such as new transmission, gas, or water lines, only in the location with the least impacts to scenic integrity.

2C3-020 Screen overhead utility lines and support towers.

2C3-021 Allow other special uses when consistent and compatible with protection of the outstandingly remarkable values of the river corridor.

4A APPALACHIAN NATIONAL SCENIC TRAIL CORRIDOR

Additional management direction for management of the Appalachian Trail corridor can be found in: *National Trails System Act (Public Law 90-543, as amended); Appalachian Trail Comprehensive Plan; Landscape Aesthetics (Agriculture Handbook 701); Forest Service Directives (FSM, FSH, and supplements); Appalachian Trail Design, Construction, and Maintenance (ATC Stewardship Manual, second edition, 2000); Appalachian Trail Overnight-Use Management Principles; Checklist for the Location, Construction, and Maintenance of Campsites and Shelters on the Appalachian Trail (ATC Stewardship Series, revised 1989); Local Management Plans for the Appalachian Trail; Wilderness Act of 1964; Eastern Wilderness Act of 1975; Virginia Wilderness Acts; Numerous Memoranda of Agreement and Memoranda of Understanding between the USDA Forest Service, the National Park Service.*

This prescription area consists of those lands mapped as the foreground area visible from the Appalachian National Scenic Trail[1] footpath, and—as designated on a case-by-case basis—associated trail shelters, overnight use sites, viewpoints, water sources and spur trails. The entire Appalachian Trail corridor encompasses approximately 63,000 acres (9%) on the Jefferson National Forest. Approximately 30,700 acres are found in this prescription area. The remainder is within wilderness (about 7,000 acres), recommended wilderness study (about 3,100 acres), backcountry (about 9,600 acres), special areas (about 8,200 acres), old growth (about 1,100 acres), special biological areas and rare communities (about 1,000 acres), the Lynn Camp Creek Aquatic Habitat Area (about 1,200 acres), pastoral/field/orchard areas (about 600 acres), and recreation/administrative/special use sites (about 300 acres). Approximately 320 miles of the Appalachian Trail and 32 associated shelters and designated overnight-use sites lie within the Forest on the Glenwood, New Castle, and New River Valley Ranger Districts, as well as the Mount Rogers National Recreation Area. This prescription area also includes all National Forest System lands acquired by the National Park Service for the Appalachian Trail and administratively transferred to the USDA Forest Service by the National Park Service under a Memorandum of Agreement.

[1] Also referred to as the Appalachian Trail throughout this document.

The Appalachian National Scenic Trail is administered by the Secretary of the Interior in consultation with the Secretary of Agriculture, and is managed as a partnership between the Forest Service, the National Park Service Appalachian Trail Park Office, the Appalachian Trail Conference, and Appalachian Trail Conference-affiliated local Appalachian Trail clubs. Management is in accordance with the National Trails System Act and the Appalachian Trail Comprehensive Plan utilizing the cooperative management system.

EMPHASIS:

Management practices are designed to protect the Appalachian Trail experience, preserve and strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Trail passes. Lands adjoining the prescription area seen from the Appalachian Trail will be managed for multiple use under the provisions of this plan, in a manner which will reasonably harmonize with and be complementary to the Appalachian Trail experience.

DESIRED CONDITION:

The Appalachian Trail is a way, continuous from Katahdin in Maine to Springer Mountain, Georgia, traversing the Jefferson National Forest for travel on foot through the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains. The Appalachian Trail is usually a simple footpath, purposeful in direction and concept, favoring the heights of land, and located for minimum reliance on construction for protecting the resource. The body of the Trail is provided by the lands it traverses, and its soul is in the living stewardship of the volunteers and workers of the Appalachian Trail community.

4A Appalachian Trail

Views from the Appalachian Trail are predominantly forested, sporadically intermixed with meadows, old fields, pastoral valleys, and cultural landscapes. Occasionally, the Appalachian Trail traverses high elevation balds and openings, which afford hikers unique and outstanding views. The Appalachian Trail offers a diversity of topography and a variety of vegetation and animal life exposing the hiker to the entire range of land forms, water features, history, and uses of the land that are found along the Appalachian Mountains.

The prescription area consists of those lands mapped as foreground from the Appalachian Trail footpath and designated viewpoints, shelters, campsites, water sources, and spur trails linking these features, utilizing the Scenery Management System. The prescription area has a minimum width of 100 feet on either side of the Appalachian Trail footpath for protection from social, aural, and other impacts, but this minimum width should be considered only when the foreground zone does not extend beyond 100 feet on either side of the Appalachian Trail footpath.

Facilities include the Appalachian Trail footpath itself, shelters approximately one day's hike apart, designated overnight-use sites, privies, trailhead parking areas, and information boards at road crossings. The footpath itself wears lightly on the land, and is designed, constructed, and maintained for foot travel only, with the exception of where the Trail is coincident with the Virginia Creeper National Recreation Trail on the Mount Rogers National Recreation Area. Associated structures are in harmony with the surrounding environment.

This prescription area traverses a range of Recreation Opportunity Spectrum classes. Management of the Appalachian Trail setting will either be consistent with or complement the semi-primitive non-motorized Recreation Opportunity Spectrum class. The linear nature of this prescription area is recognized in determining the Recreation Opportunity Spectrum class.

Recreation management is designed to provide a variety of opportunities in the most primitive and natural recreation setting possible. Careful acquisition and trail design has allowed an appearance of a more primitive setting than the Recreation Opportunity Spectrum would predict. Trailheads are designed with sensitivity to scale and character to set the tone for a non-motorized experience. Motorized recreation, bicycles, horses, and pack stock are not allowed on the Appalachian Trail footpath, although there are some rare exceptions (see Standards). Roads within ½ mile of the Appalachian Trail are managed with hiker security, safety, and Appalachian Trail values in mind.

Roads, utility transmission corridors, communication facilities, or signs of mineral development activity exist or may be seen within the prescription area, although the goal is to avoid these types of facilities and land uses to the greatest extent possible and blend facilities which cannot be avoided into the landscape so that they remain visually subordinate.

This prescription area retains a natural, forested or pastoral landscape character shaped by both natural processes and humans. Management practices are modified to recognize the nationally significant aesthetic and recreational values of these lands. Low intensity vegetation management is appropriate to maintain the long term goals and stewardship objectives of the Appalachian National Scenic Trail prescription area. Management activities needed to preserve or create vistas and desirable open areas are a high priority. Activities are planned and carried out in cooperation with appropriate Appalachian Trail management partners.

This prescription area is characterized by a predominance of mid- and late-successional forests with multiple canopy layers, which provide a variety of habitat niches, and thermal and protective cover for wildlife. Small to medium patches of old growth forest communities continue to develop throughout this area. Existing levels of early

successional habitat conditions are maintained including: meadows, old fields, and openings created by flooding, wind damage, wildland fire, insect/disease infestations, or vegetation management activities. Occasional large openings of early successional habitat may be maintained as old fields and pastoral landscapes, as well as created through natural disturbance.

In addition to this prescription area, the Appalachian Trail also passes through prescriptions 1A, 1B, 4D, 4E, 4K1, 4K3, 4K4, 4K5, 5A, 5B, 5C, 6A, 6B, 6C, 7D, 7G, 8E2, 8E6, 9A4, 9F, 9H, 12B, and 12C. Refer to those prescriptions for Desired Conditions and standard for Appalachian Trail management.

OBJECTIVES

4A-OBJ1 Maintain an Agreement for Sponsored Voluntary Services between each Ranger District and partner Appalachian Trail Club.

STANDARDS

Terrestrial and Aquatic Species

4A-001 Maintain the existing early-successional forest habitat within this prescription area when compatible with Appalachian Trail values. Take advantage of natural disturbance events and continued maintenance of existing openings to meet the needs for early successional habitats.

4A-002 To enhance the Appalachian Trail environment, wildlife and fish habitat improvements are allowed. Existing wildlife openings, pastoral areas, or old fields may be maintained. Expansion of existing openings and/or creation of new openings may occur when compatible with Appalachian Trail values. Maintenance methods may include cultivation, grazing, herbicides, mowing, and burning. Use of native species will be emphasized.

Threatened, Endangered, and Sensitive Species

4A-003 Within the Peaks of Otter salamander habitat conservation area, activities in the Appalachian Trail corridor must comply with the Habitat Conservation Agreement for Peaks of Otter salamander. See Management Prescription 8E2 for Peaks of Otter salamander habitat conservation area management direction.

Vegetation and Forest Health

4A-004 Vegetation is managed only to enhance the Trail environment. Allow timber harvest, prescribed burning, wildland fire use, hand tools, power tools, mowing, herbicides, biological controls, and grazing to manage vegetation as appropriate. Vegetation management activities are limited to:

- Maintain open areas, old field habitats, and vistas that enhance the scenic qualities of the Appalachian Trail;
- Control insects and diseases;
- Maintain or improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities, species dependent on disturbance, and wildlife viewing opportunities;
- Meet trail construction and maintenance needs, including shelters;
- Manage fuels;
- Restore, enhance, or mimic historic fire regimes;

4A APPALACHIAN TRAIL

- Control non-native invasive vegetation;
- Provide for public safety or resource protection.

Timber Management

4A-005 The lands in this prescription area are classified as unsuitable for timber production.

4A-006 Hauling or skidding along the Appalachian Trail footpath itself or using the Appalachian Trail for landings or temporary roads is prohibited. Hauling and skidding within the prescription area will be allowed only if the environmental analysis indicates that this is the only feasible and prudent alternative.

Wildland Fire Management

4A-007 Suppression strategies will strive to minimize impact on Appalachian Trail values.

4A-008 Prohibit heavy equipment line construction on the Appalachian Trail footpath, unless necessary for emergency protection of public property and safety.

4A-009 Implement restorative measures in areas damaged by fire-suppression efforts after fire-suppression efforts have ceased.

Prescribed Fire and Wildland Fire Use

4A-010 Prohibit heavy equipment line construction on the Appalachian Trail footpath.

4A-011 Implement needed restorative measures after prescribed fire or wildland fire use projects.

Recreation

4A-012 Motorized, horse, pack stock, and bicycle use on the Appalachian Trail are prohibited. Exceptions include where the Appalachian Trail crosses or is located on open Forest Service system roads; other federal, state, county or other public roads; or as authorized where the Appalachian Trail is coincident with the Virginia Creeper National Recreation Trail; or as needed for management of the Appalachian Trail; or for administrative or emergency purposes.

4A-013 Other uses within the prescription area, including crossings of the Appalachian Trail, may be considered following coordination with appropriate Appalachian Trail partners. Locate authorized uses crossing the Appalachian Trail to minimize impacts to the Appalachian Trail environment, preferably where impacts already exist.

4A-014 Overnight camping will be allowed, unless prohibited by Forest Supervisor's order.

4A-015 Identify the Appalachian Trail through standard signs and blazes.

4A-016 Locate and maintain shelters, campsites, and privies where there is a demonstrated need for overnight use.

4A-017 Reconstruct or relocate existing portions of the Appalachian Trail as needed to enhance the recreation experience, protect threatened, endangered, sensitive, and locally rare species; protect the health of the ecosystem; or protect heritage resources. Such relocations provide a reasonable level of public safety.

4A-018 Limit additional development to facilities compatible with the Appalachian Trail.

4A-019 This area is unsuitable for designation of new OHV routes or ATV use areas.

Scenery

4A-020 All management activities will meet or exceed a Scenic Integrity Objective of High.

Minerals

4A-021 The prescription area is available for oil and gas leasing with a “no surface occupancy” stipulation. The area is not available for other Federal leasable minerals. When existing leases terminate or expire, new leases are changed to reflect this standard.

4A-022 These areas are not available for mineral materials.

Roads

4A-023 Authorize new roads within the Appalachian Trail prescription area only if entering the prescription area is the only feasible and prudent location.

Lands and Special Uses

4A-024 Issue non-recreational special-use authorizations only where compatible with Appalachian Trail management or where there is a demonstrated public need or benefit and where no other reasonable alternatives exist.

4A-025 Authorize recreational special uses only when they do not adversely affect Appalachian Trail values and resources as described by this management prescription. Limit recreation events such as foot races or horseback endurance events to designated crossings only, except where coincident with the Virginia Creeper National Recreation Trail. Only temporary authorizations of one year or less for use of the footpath are allowed due to the probability of changing trail conditions or management needs except for existing permits. Existing permits may be renewed when there is no proposed change in use, or changes in trail conditions or management needs. Permits will not be issued for overnight camping at Appalachian Trail shelters or within 300 feet of the footpath.

4A-026 Do not authorize vendor or peddler permits.

4A-027 Allow agricultural special-use authorizations to maintain open and pastoral spaces.

4A-028 Locate new public utilities and rights-of-way in areas of this management prescription area where major impacts already exist. Limit linear utilities and rights-of-way to a single crossing of the prescription area, per project.

4A-029 Require mitigation measures including screening, feathering, and other visual management techniques to mitigate visual and other impacts of new or upgraded utility rights-of-way. Mitigation measures apply to facilities as well as vegetation.

4A-030 This management prescription area is unsuitable for special-use authorizations for new communication sites and wind generation sites.

4C1 GEOLOGIC AREAS

4C1 GEOLOGIC AREAS

Two areas on the Jefferson National Forest are designated as Geologic Areas, the Raven Cliff karst area on the Mount Rogers NRA, and the Russell Fork boulder field area on the Clinch District. This management prescription is allocated to approximately 1,500 acres (< 1%) across the Jefferson National Forest.

EMPHASIS:

Geologic Areas are managed to highlight and protect unique geologic resources as well as to develop public understanding of, and appreciation for, the influence of geology on the ecology and human history. Management focus is on protection in the Raven Cliff area and on showcasing the unique and scenic geologic resources in the Russell Fork area.

DESIRED CONDITION:

Geologic Areas provide outstanding opportunities for people to learn about the natural history of the Forest and to enjoy a wide variety of recreation opportunities in an attractive setting. Safe, barrier-free public access by road and trail is provided and designed to protect sensitive geologic resources. Sensitive karst areas are protected from human-caused detrimental hydrologic and habitat change. Recreational access through these areas may be limited in order to protect geologic resources. Where public access is unrestricted, interpretive information is available to develop understanding of the importance of protecting the geologic and biologic communities of the area.

There is low need for visitors to rely on their personal physical abilities and primitive recreation skills. Education and interpretation are strongly emphasized and school groups are encouraged to visit the sites. The sights and sounds of other visitors are evident and opportunities to encounter other visitors are moderate to high. Visitors seeking solitude may find that difficult to achieve, particularly in peak use seasons. Trails may be highly developed, including hardened trails and boardwalks to protect the resource and to provide for a high level of accessibility for persons of all abilities. Mountain biking, horseback riding, and dispersed camping are confined to designated trails and areas. Other appropriate recreational activities include hiking, bird watching, photography, hunting and fishing.

Visitors enjoy a natural appearing landscape character with outstanding or interesting geologic formations. Landscapes feature a structurally diverse older aged forest community with a continuous forested canopy, with the exception of occasional gaps created by high water tables, sinkholes, storms, insects, diseases, or fire. Infrequent pastoral and historic/cultural enclaves may also exist. Road corridor improvements and interpretive facilities are evident changes to the natural environment but these man-made alterations fit well with the character of the surrounding landscape. Commercial timber harvest is not appropriate within this prescription area. Prescribed fire, use of wildland fire, integrated pest management, and felling of trees may be used to manage vegetation. Other management activities are not evident to the average visitor and the valued character of these landscapes appears intact with no noticeable deviations.

Since there is the potential for large numbers of visitors at peak use seasons, regulations are necessary for protection of resources and visitors. Information is provided at bulletin boards or kiosks, as well as at Forest Service visitor's centers and in brochures. Visitors are encouraged to practice minimum impact techniques while recreating. Trash receptacles may be provided at parking areas and high use areas. Facilities of a modern nature, located outside of sensitive karst areas, are present to provide for visitor safety and comfort and to protect resources. Facilities are designed with sensitivity to character, scale, and color, which complement the surroundings at each specific site. This could range from semi-primitive to rural. Facilities might include parking areas, trailheads,

bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, etc.

Natural processes will eventually result in a large patch late successional to old growth forest matrix dominated by shade tolerant hardwoods and eastern white pines throughout most of this area. Rare communities and associated species will continue to exist in the area. Insects and diseases play a major role in shaping future species composition and successional stages across these areas, however, integrated pest management favoring biological controls may be used to eradicate or suppress non-native invasive pests. Non-native vegetation occurs only as transients and is not self-perpetuating. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

STANDARDS

Water, Soil, and Air

4C1-001 Protect sensitive karst areas from human-caused detrimental hydrologic and habitat change.

Terrestrial and Aquatic Species

4C1-002 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife may be present and maintained, but no expansion of openings or creation of new permanent openings of this type occurs. Native species are emphasized when establishing food plants for wildlife. Some openings provide permanent shrub/sapling habitat as a result of longer maintenance cycles.

Vegetation and Forest Health

4C1-003 Native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, and sensitive species. Non-native invasive insects and diseases may be eradicated or suppressed. Favor biological control methods.

4C1-004 Eradicate non-native invasive vegetation when the infestations are isolated. Use hand-applied chemicals, with Forest Supervisor approval, when necessary.

4C1-005 Prescribed fire, use of wildland fire, integrated pest management, and felling of trees are allowed to

- provide for public health and safety;
- maintain developed recreation facilities, including roads and trails;
- maintain rare communities and species dependent on disturbance;
- reduce fuel buildups; or
- control non-native invasive vegetation.

Timber Management

4C1-006 These lands are classified as unsuitable for timber production. Timber harvest is not allowed unless associated with salvage or reasonable access to valid existing rights.

4C1-007 Salvage of dead and dying trees is only allowed when there is a threat to health and safety or ecological resources.

4C1 GEOLOGIC AREAS

Prescribed Fire and Wildland Fire Use

4C1-008 Conduct prescribed fire and wildland fire activities recognizing sensitive geologic conditions in karst areas, including ground water.

Non-timber Forest Products

4C1-009 Do not permit the collection of non-timber forest products, except for scientific purposes as permitted by the Forest Supervisor.

Recreation

4C1-010 Recreational access through these areas may be restricted in order to protect geologic resources.

4C1-011 These areas are unsuitable for designation of new OHV/ATV routes or use areas.

Scenery

4C1-012 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Minerals

4C1-013 These areas are available for federal oil and gas leasing with controlled surface use to protect the geologic resources and ecological values of the area. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on geologic resources and ecological values.

4C1-014 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed to (a) administer the area; (b) protect geologic resources and ecological values; (c) restore riparian areas and aquatic habitat; (d) control erosion and sedimentation; or (e) repair flood damage.

4C1-015 Federal oil and gas leases and private mineral rights exist in the Russell Fork boulder area. Roads, wells, and other necessary infrastructure associated with these leases and rights are allowed. Existing lease stipulations are used to minimize surface disturbances in this area. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized and reasonable access is granted. Encourage such interests to avoid rare communities and minimize surface disturbances.

Roads

4C1-016 Do not permit road construction, subject to valid existing rights and leases.

4C1-017 Road reconstruction and minor relocation are permitted after full consideration of effects on geologic resources and ecological values.

Lands and Special Uses

4C1-018 Locate new public utilities and rights-of-way to areas of this prescription area where major impacts already exist. Limit linear utilities and rights-of-way to a single crossing of the prescription area, per project.

4C1-019 Require mitigation measures including screening, feathering, and other visual management techniques to mitigate visual and other impacts of new

or upgraded utility rights-of-way. Mitigation measures apply to facilities as well as vegetation.

4D BOTANICAL - ZOOLOGICAL AREAS

This management prescription is allocated to approximately 4,700 acres (1%) across the Jefferson National Forest (see Table 3-1). These lands contain individual threatened, endangered, sensitive, and locally rare plant or animal communities found within major forest communities, not within a rare community. Rare communities are managed according to Prescription 9F As new special biological areas are found, they will be added to prescription 4D through the Forest Plan amendment process.

Table 3-1. Special Biological Areas

Big Branch	Keokee Lake (small whorled pogonia)
Brush Mountain (piratebush)	Little Mountain (small whorled pogonia
Butler Tract	Little Stone Mountain (various species)
Cressy Creek (Virginia round-leaf birch)	Lost Mountain (mountain rattlesnake root)
Dragon's Tooth (piratebush)	McFalls Creek (nodding pogonia)
Guest River Gorge (Virginia spirea)	Pound River (Virginia spirea)
High Knob (magnolia warbler)	Straight Fork (magnolia warbler)

EMPHASIS:

These lands serve as a network of core areas for conservation of significant elements of biological diversity. The goal of designation and management of these areas is to perpetuate or increase existing individual plant or animal species and communities that are of national, regional, or state significance and identified as threatened, endangered, sensitive, or locally rare.

DESIRED CONDITION:

Botanical-Zoological areas are managed for the following: (1) protection of threatened, endangered, sensitive, or locally rare species from human taking or human-caused detrimental habitat changes; (2) stable or increasing populations of threatened, endangered, sensitive, or locally rare species; and (3) functioning ecosystems.

The natural evolving or natural appearing landscape character of these areas exhibits a variety of forested and non-forested communities frequently associated with disturbance like fire. Late successional to old growth forest communities may exist in some of these areas and additional acres will develop in future years. Ideally, natural processes within these areas proceed unencumbered; however, in some cases, the prevailing environmental conditions have changed so as to prevent, or at least hinder, natural processes. Examples of these conditions include fire suppression, adjacent human development, and influx of non-native species.

Prescribed fire, wildlife habitat improvements, domestic livestock grazing, integrated pest management, and occasional low intensity timber harvest are appropriate management tools to maintain the long-term goals of the desired condition in these areas related to the improvement of threatened, endangered, sensitive, and locally rare species habitat. Specific management activities necessary to maintain, restore, or enhance threatened, endangered, sensitive, and locally rare species for each special biological area are described in the Virginia Department of Conservation and Recreation, Division of Natural Heritage, Reports of Special Biological Areas and other pertinent biological reference material.

These management activities will result in a forest successional stage appropriate for

4D BOTANICAL / ZOOLOGICAL AREAS

maintaining the threatened, endangered, sensitive, and locally rare species. All areas are protected from human-caused detrimental habitat change, the taking of threatened or endangered species, and the collection of living plants or animals unless such collections are used for achieving the stated management goals. Recreational access through these areas may be limited in order to protect natural heritage resources. Where public access is unrestricted, interpretive information is available to develop understanding of the importance of protecting the plant and animal communities of the area.

Access to these areas may be limited. New roads are managed as closed. New trail sections to link existing trails or for education and interpretation are considered on a case-by-case basis. Recreation opportunities are limited to interpretation, bird watching, wildlife viewing, nature photography, and hiking on non-motorized, non-mechanized foot trails.

Some of these special biological areas lie within the foreground of the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

These sites can be nominated for placement on State registries of natural areas. These voluntary agreements recognize the protection and management of natural areas that support rare species and significant natural communities.

OBJECTIVES

4D-OBJ1 Based on periodic monitoring of known special biological areas, identify management activities needed to maintain, enhance or restore the habitat of threatened, endangered, sensitive, and locally rare species, and implement an annual program of work designed to meet these needs.

STANDARDS

General

4D-001 In cooperation with the States' Natural Heritage agencies, make appropriate adjustments to 4D Special Biological Areas through the Forest Plan amendment process as new information becomes available.

Terrestrial and Aquatic Species

4D-002 Wildlife habitat improvements may be created, maintained, or enlarged if compatible with the habitat needs of the threatened, endangered, sensitive, and locally rare species. Only native species are used when establishing food plants for wildlife. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

4D-003 Large, medium, and small patches of old growth are retained if compatible with the habitat needs of the threatened, endangered, sensitive, and locally rare species.

Vegetation and Forest Health

4D-004 Native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, sensitive, or locally rare species. Non-native, invasive insects and diseases may be eradicated or suppressed to prevent a loss of the special biological community. Favor biological control methods.

4D-005 Eradicate non-native invasive plants when the infestations are isolated. Use hand-applied chemicals, with Forest Supervisor approval, when necessary.

4D-006 Vegetation management is allowed when compatible with the habitat needs of the threatened, endangered, sensitive, and locally rare species. Allow vegetation management activities to:

- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Restore, enhance, or mimic historic fire regimes;
- Maintain, enhance or restore the diversity and complexity of native vegetation;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation; or
- Provide for public safety and trail maintenance.

Timber Management

4D-007 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

Non-timber Forest Products

4D-008 Do not permit the collection of non-timber forest products, except for scientific purposes as permitted by the Forest Supervisor.

Prescribed Fire and Wildland Fire Use

4D-009 Vegetation management may be accomplished with management-ignited prescribed fire, wildland fire use, and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

4D-010 Where recreational uses are negatively affecting threatened, endangered, sensitive, and locally rare species, modify recreation sites or trails to reduce or eliminate negative effects. New and improved recreational developments are designed to avoid adverse effects to threatened, endangered, sensitive, and locally rare species.

4D-011 These areas are unsuitable for designation of new OHV routes or ATV use areas, unless crossing the area is the only feasible alternative or results in less environmental impact.

Appalachian National Scenic Trail

4D-012 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

4D-013 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

Minerals

4D-014 These areas are available for federal oil and gas leasing with controlled surface use to protect threatened, endangered, sensitive, and locally rare species. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on threatened, endangered, sensitive, and locally rare species.

4D-015 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect threatened, endangered, sensitive, and locally rare species habitat.

4D-016 Federal oil and gas leases exist in some of these areas. Roads, wells, and other necessary infrastructure associated with these leases are allowed. Existing lease stipulations are used to minimize disturbance to threatened, endangered, sensitive, and locally rare species habitat.

4D-017 Private mineral rights exist in some of these areas. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to threatened, endangered, sensitive, and locally rare species habitat.

Roads

4D-018 Road construction or reconstruction are informed by a watershed-scale or site-specific road analysis considering the needs and values of the specific special biological area.

4D-019 Density of open roads remains near the current level throughout the planning period, with only small increases or decreases.

Lands and Special Uses

4D-020 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Existing uses may continue unless removal is necessary to protect threatened, endangered, sensitive, and locally rare species.

4E CULTURAL/HERITAGE AREAS

Four areas on the Jefferson National Forest are designated as Cultural/Heritage Areas, the Settlers Museum on the Mount Rogers NRA, the Lignite and Fenwick Mines areas on the New Castle District and the Glenwood Iron Furnace areas on the Glenwood District. This management prescription is allocated to approximately 1,700 acres (<1%) across the Jefferson National Forest.

EMPHASIS:

Cultural/Heritage Areas are managed to highlight and protect unique historic resources as

well as to develop public understanding of, and appreciation for, the influence of human history on the forest ecosystem. Sites are preserved and protected as appropriate in accordance with the law. Management focus is providing public access and education.

DESIRED CONDITION:

Cultural/Heritage Areas provide outstanding opportunities for people to learn about the cultural history of the Forest and to enjoy a wide variety of recreation opportunities in an attractive setting. Safe, barrier-free public access by both roads and trails is provided and designed to protect sensitive historic resources. Sensitive resources and areas are protected from human-caused damage. Recreational access through parts of these areas may be limited in order to protect historic resources. Where public access is unrestricted, interpretive information is available to develop understanding of the importance of protecting the historic and biologic communities of the area. Interpretive materials and services are high quality and effectively communicate the influence of people on the forest ecosystem. Site-specific management plans are prepared for these areas covering site interpretation; cultural/historic resource protection; vegetation, fire, and wildlife management, and other resource uses.

There is low need for visitors to rely on their personal physical abilities and primitive recreation skills. Education and interpretation are strongly emphasized and school groups are encouraged to visit the sites. The sights and sounds of other visitors are evident and opportunities to encounter other visitors are moderate to high. Visitors seeking solitude may find that difficult to achieve, particularly in peak use seasons. Trails may be highly developed, including hardened trails and boardwalks to protect the resource and to provide for a high level of accessibility for persons of all abilities. Mountain biking, horseback riding, and dispersed camping may be confined to designated trails and areas. Other appropriate recreational activities include hiking, bird watching, photography, hunting and fishing.

Visitors enjoy a variety of forested and non-forested communities, with outstanding and interesting historic features. The landscape character is typically historic, pastoral, or cultural often showing a great deal of human influence, surrounded by a natural appearing backdrop. Late successional to old growth forest communities occur in some of these areas and additional acres may be allowed to develop in future years if consistent with the historic character of the area.

Some of these cultural/heritage areas lie within the foreground of the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Since there is the potential for large numbers of visitors at peak use seasons, regulations are necessary for protection of resources and visitors. Information is provided at bulletin boards or kiosks, as well as at Forest Service visitor's centers and in brochures. Visitors are encouraged to practice minimum impact techniques while recreating. Trash receptacles may be provided at parking areas and high use areas. Modern facilities that fit with the historic character of the area are present to provide for visitor safety and comfort and to protect resources. Facilities are designed with sensitivity to character, scale, and color, which complement the surroundings at each specific site. This could range from semi-primitive to rural. Facilities might include parking areas, trailheads, bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, etc.

4E CULTURAL/ HERITAGE AREAS

These areas are characterized by a full range of forest successional stages from early to mid to late. Early-successional forest conditions may be created both naturally and purposefully when compatible with the cultural and historic objectives of the area. Vegetation is influenced both by natural processes and humans. Low intensity timber harvest, prescribed fire, wildlife habitat improvements, and integrated pest management are appropriate management tools to maintain the long-term goals of the desired condition related to education and interpretation of the historic uses of these areas. Relatively longer rotation ages and a lower percentage of early successional forest in these areas reflect a "low intensity" approach to vegetation management and the higher priority of protecting the cultural resource. Wildland fires are suppressed using an appropriate management response to protect heritage resources.

STANDARDS

General

4E-001 All management activities within these areas must be compatible with the protection and interpretation of cultural/historic resources.

Water, Soil, and Air

4E-002 Watershed restoration work is scheduled considering protection of historic values and resource elements.

Terrestrial and Aquatic Species

4E-003 Provide up to four percent of forested land in early successional habitat conditions in the Lignite and Fenwick Mines areas.

4E-004 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/ sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

4E-005 Large, medium, and small old growth patches are maintained within these areas when consistent with the historic character of the area.

Vegetation and Forest Health

4E-006 Control insect and disease outbreaks when necessary to protect the cultural/ historic values, to reduce hazards to visitors, or for safety or legal reasons. Eradicate recently established non-native pests when possible. Favor the most effective control method.

4E-007 Non-native species may be planted for watershed restoration purposes.

4E-008 Allow vegetation management activities to:

- Restore or maintain historic vegetative communities appropriate to the time period being emphasized;
- Demonstrate historic and present day logging systems;
- Enhance or rehabilitate scenery;
- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;

- Maintain rare communities and species dependent on disturbance;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation;
- Reduce fuel buildups; or
- Provide for public health and safety.

Timber Management

4E-009 The Lignite and Fenwick Mines areas on the New Castle Ranger District are suitable for timber production. See Timber Suitability Map.

4E-010 The remaining areas are unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

4E-011 Within the Lignite and Fenwick Mines areas, timber harvest practices are modified to recognize and interpret the cultural, historic, aesthetic and recreational values of these lands.

4E-012 All even and uneven-aged silvicultural systems are allowed. The systems used will be based on the vegetation management objective.

4E-013 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	100-120
Cove hardwoods	80-100
White pine	60-80
Yellow pine	60-80
Scarlet oak/Black oak	60-80

Non-timber Forest Products

4E–014 Do not permit the collection of living plants or animals, and artifacts unless such collections are for the purpose of achieving the stated management goals.

Wildland Fire Suppression

4E-015 A full range of suppression strategies are employed to protect cultural/ historic resources.

Prescribed Fire and Wildland Fire Use

4E-016 Vegetation management may be accomplished with management-ignited prescribed fire and mechanical treatments as an appropriate method of reducing costs associated with these activities.

4E-017 Areas where heavy equipment fireline construction is prohibited are designated through the site plan for the area.

Recreation

4E-018 Recreational access through these areas may be restricted in order to protect historic and cultural resources.

Appalachian National Scenic Trail

4D-013 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional

management direction applicable to this corridor.

Scenery

4E-020 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	M	M	M	M

4E-021 Facilities and management activities emphasize the historic landscape character.

Minerals

4E-022 The Settlers Museum and Glenwood Furnace areas are available for federal oil and gas leasing with controlled surface use to protect the cultural/historic resources and values. The Lignite and Fenwick Mines areas are available for federal oil and gas leasing with standard stipulations. Other Federal minerals may be available in all three areas on a case-by-case basis.

4E-023 The Settlers Museum and Glenwood Furnace areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed. In the Lignite and Fenwick Mines areas, permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the cultural/historic resources and values.

Lands and Special Uses

4E-024 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Continue existing uses. Require a landscape management plan with screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of new, upgraded, or reauthorized utility corridors or communication sites.

4F SCENIC AREAS

This approximately 1,000 acre area is found on the Clinch Ranger District, known for its rock outcrops, cliffs, cascades, a small waterfall, and the Devil's Bathtub.

EMPHASIS:

Protect and enhance the scenic qualities and natural beauty.

DESIRED CONDITION:

This prescription area is managed with a focus on scenic values. Visitors to this area enjoy hiking, photography, wildlife viewing, and hunting. The landscape character is natural appearing with an intact, continuous forest canopy. Occasional gaps occur in the canopy from the results of natural disturbances.

A 4-mile loop trail along the Devil's Fork drainage and a 2-mile side trail to the top of Little Mountain facilitate visitors' enjoyment of the stream and surrounding gorge. Most of the recreation use is day-hiking to the Devil's Bathtub where visitors enjoy a moderately challenging trail to a unique geologic feature. Beyond the Bathtub and off the trail, opportunities for solitude are available, and visitors may be challenged to rely on their own personal physical abilities and primitive recreational skills such as bouldering,

climbing, and orienteering. Other than the trail, no facilities are present within the Devil's Fork area.

Vegetation is influenced both by natural processes and humans. The lower part of the trail is actually an old logging and coal mining railroad grade that threads its way up the cascading stream. Devil's Fork is underlain by private mineral rights. At some point in the future, it is possible that roads, wells, and other necessary infrastructure associated with these rights may be observed within the area if reasonable access cannot be provided outside of this prescription area. Forest Service management practices focus on maintenance of the existing scenery, recreation, watershed, and aquatic resources and values of the area.

These areas are characterized by a predominance of mid- and late-successional forests composed of poplars, hemlocks, and birch with a well-developed understory of rhododendron. As the area continues to age, natural mortality increases developing characteristics of older aged forest communities. Integrated pest management is an appropriate management tool to control non-native invasive vegetation and pests. Prescribed fire or wildland fire use may be used to restore and maintain historic fire regimes; however, the primary disturbance in the area is flooding, windstorms, and landslides.

STANDARDS

Terrestrial and Aquatic Species

4F-001 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are not maintained, and succeed to forest, deteriorate over time, or are removed. New permanent wildlife openings are not created.

Vegetation and Forest Health

4F-002 Control insect and disease outbreaks when necessary to protect scenic values, to reduce hazards to visitors, or for safety or legal reasons. Eradicate recently established non-native invasive pests when possible. Favor the most effective control method.

4F-003 Suppression, eradication, and Slow the Spread actions to control **gypsy moth** infestations are allowed.

4F-004 Actions to eradicate or suppress **hemlock woolly adelgid** infestations are allowed.

4F-005 Eradicate non-native invasive plants when the infestations are isolated. Use hand-applied chemicals when necessary.

4F-006 Salvage of dead and dying trees is only allowed when there is a threat to health and safety or ecological resources.

Timber Management

4F-007 These lands are unsuitable for timber production. Timber harvest is not allowed unless associated with reasonable access to valid existing rights.

Non-timber Forest Products

4F-008 Do not issue authorizations for the commercial use of any forest products.

4F-009 Allow personal-use collection of dead and down wood only for on-site campfire use.

4F-010 Allow personal-use collection of non-timber forest products (nuts, berries,

pinecones, etc.), provided they are not threatened, endangered, sensitive or locally rare.

Wildland Fire Suppression

4F-011 Use suppression methods and equipment that cause the least alteration of the watershed landscape and least disturbance of the land surface.

4F-012 Tractor-plow units or bulldozers are allowed, with Forest Supervisor approval, only on fires with an imminent threat to life or private property that cannot be controlled by other means. Evidence of such use is obliterated as soon as practicable.

Prescribed Fire and Wildland Fire Use

4F-013 Management-ignited prescribed fire and mechanical treatments are allowed to protect and enhance scenic resources and values; reduce wildland fire potential due to high fuel loadings, mimic historic fire regimes, maintain or enhance wildlife habitats, or to benefit fire dependent and associated forest communities.

Recreation

4F-014 Trail construction, reconstruction, and relocation are allowed and designed for protection of the soil, water, vegetation, visual quality, user safety, and long-term maintenance. Emphasize trails that appear to be part of the natural environment and not an intrusion upon it.

Scenery

4F-015 Management activities; such as trail construction, maintenance and signing are designed to meet or exceed a high scenic integrity objective.

4F-016 This area is unsuitable for designation of new OHV routes or ATV use areas.

Range

4F-017 Livestock grazing is not permitted.

Minerals

4F-018 The entire Devil's Fork watershed is underlain by private mineral rights. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible. (See also standards under Lands).

4F-019 These areas are not available for mineral materials for commercial and personal use purposes. Administrative and free use of mineral materials is allowed.

Roads

4F-020 Do not permit road construction and reconstruction, subject to valid existing rights.

Lands and Special Uses

4F-021 These areas are unsuitable for new linear rights-of-way and communication sites, subject to valid existing rights. Require a landscape management plan with screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of upgraded, or reauthorized utility corridors or communication sites.

4F-022 Existing special use authorizations are allowed to continue. Other new special uses are authorized if consistent and compatible with the desired condition of these areas.

4J URBAN/SUBURBAN INTERFACE

This management prescription is allocated to approximately 3,900 acres (<1%) across the Jefferson National Forest. However, Wildland Urban Interfaces occurs whereever forestland adjoins human developments.

EMPHASIS:

These areas emphasize a "defensible space" that provides a buffer between human developments and forestland, reducing the risk of wildland fire. This prescription recognizes that these areas are people's "backyards" so a long-term goal of high quality, fire-resistant scenery is also emphasized.

DESIRED CONDITION:

The vegetative composition and structure of these lands serve as a firebreak to reduce the inherent risks of wildland fire, increase the likelihood of successful fire suppression, and to reintroduce a frequent low-intensity fire regime fire into fire-adapted ecosystems. Fuel treatments are designed to reduce stand density, reduce ladder fuels, and to reestablish the open woodland character of xeric pine and oak ecosystems.

Management of these lands is coordinated with adjacent landowners. Since wildland fires do not stop at political, jurisdictional, or private boundaries, Forest Service efforts are combined with adjacent landowners, local community governments, and cooperating agencies to incorporate the defensible space concept. Other elements of the strategy may include signing, adequate roads, water sources, and public education programs to inform communities of the need for management action.

The structure and appearance of the Wildland Urban Interface defensible space varies by forest type and fuel conditions at the time of initial treatments. Forest understories may be treated to reduce ladder fuels, shrub layers may be removed or compacted, tree density may be reduced through thinning, or entire overstories may be removed. Defensible space areas may have a well-defined, artificial looking edge. As weather and fuel conditions permit, prescribed fire may be applied in an effort to meet fuel reduction and ecosystem restoration objectives.

Mid- and early-successional forests are common as a result of fuels reduction treatments. In the xeric pine and oak woodlands elements of both early successional grassy understories and late successional open woodland overstories are present. The landscape character ranges from natural appearing to suburban. These landscapes will often appear altered in the short-term while the defensible space is created and a normal fire regime restored. The long-term goal is to maintain a moderate to high scenic integrity. Managers will use a variety of public education programs to establish an "ecological aesthetic" over time to build knowledge and appreciation of how a healthy ecosystem functions and how humans fit into it.

These areas will provide a variety of motorized and non-motorized recreation opportunities. Human activities may be evident in some places. Visitors will likely see other people in the parts of these areas with motorized access. The trail and access emphasis will depend on the specific conditions of each area. Outdoor skills are of moderate importance to visitors in these areas.

4J URBAN/ SUBURBAN INTERFACE

OBJECTIVES

4J-OBJ1 Restore and maintain 3,900 acres of this area in condition class 1 by the end of the planning period.

STANDARDS

Terrestrial and Aquatic Species

4J-001 Early successional habitat is created as a result of fuels reduction and ecosystem restoration treatments .

4J-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur and are frequently incorporated into fuel breaks. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

4J-003 Old growth patches are not provided for in this prescription area.

Vegetation and Forest Health

4J-004 The forest health strategy is to prevent the occurrence of pest problems by managing host-type conditions at low hazard conditions. Use appropriate and practical suppression of pests, both non-native and native, with all available tools as the normal practice, including species conversions to match species to sites and genetic selections for disease resistance.

4J-005 Assure salvage is rapid, complete, and emphasizes marketing timber before its value decreases.

4J-006 Maintain and restore Table Mountain pine communities, except within identified firebreaks where vegetation management is desirable to establish communities that are more fire-resistant.

Timber Management

4J-007 This area is classified as suitable for timber production. See Timber Suitability Map.

4J-008 Use even-aged silvicultural systems. Clearcutting is the optimum silvicultural system for regenerating southern yellow pines, reducing fuels, and providing a defensible space in these management prescription areas.

4J-009 Clearcutting, coppice with reserves with 15 to 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration, and two-aged silvicultural systems, which leave 20-40 square feet of basal area per acre, are predominately used. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

4J-010 Regeneration harvest areas range in size from 2 to 40 acres.

4J-011 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	80-100
Cove hardwoods	120-180
White pine	70-90
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Scenery

4J-012 This area is managed with a short-term scenic integrity objective of low until the ecosystem and landscape character are rehabilitated. By the end of the planning period, management activities are designed to meet or exceed the following Scenic Integrity Objectives:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

4K Special Areas - **North Creek, Hoop Hole, Crest Zone, Whitetop Mountain, Whitetop Laurel and North Fork of Pound**

This management prescription is allocated to approximately 29,500 acres (4%) across the Jefferson National Forest. Each Special Area is described separately. The standards that apply are discussed at the end of the description and desired future condition for each of the six areas. Portions of this management prescription are suitable for timber production.

EMPHASIS:

These six areas contain a variety of unique natural resources with a mixture of compatible management emphases. Because of their unique features, complexity, and degree of interest, these areas are designated as Special Areas.

4K1 NORTH CREEK SPECIAL AREA

The approximately 5,200 acre North Creek Special Area is located in Botetourt County, east of Arcadia. The North Creek Special Area includes most of the North Creek watershed. This watershed is almost entirely national forest land (99%), which is unusual on the Jefferson National Forest and across the Southern Appalachians. This area encompasses the Apple Orchard Falls Special Management Area identified in the 1985 Jefferson Forest Plan, a significant portion of the Peaks of Otter Salamander habitat conservation area, popular wild trout fishery, North Creek Campground, Colon Hollow dispersed recreation area, a portion of the Appalachian National Scenic Trail, and two National Recreation Trails. North Creek is an eligible Wild and Scenic River in the recreational category and has been designated an “Exceptional Surface Water” by the State of Virginia. The area is bounded by the Blue Ridge Parkway on the south, the slopes of Pine Mountain and Thomas Mountain on the east, Colon Hollow, Arcadia, and Jennings Creek on the north, and the slopes above Middle Creek on the west.

The North Creek Special Area contains significant recreation, water, historic, and biologic values. The North Creek Special Area is managed to: 1) recognize, maintain, and enhance the high value dispersed and developed recreation uses and scenic values throughout the area including the Appalachian National Scenic Trail; 2) maintain, restore, and enhance aquatic and riparian processes, functions, and habitats; 3) maintain, restore, and enhance habitats for the Peaks of Otter Salamander and other forest interior species; and 4) protect and perpetuate the outstandingly remarkable values that led to North Creek’s status and classification as a “recreational” Wild and Scenic River candidate.

Due to the diversity of values and uses of the North Creek Special area, management emphasis varies as one moves from west to east and north to south in the management prescription. Areas in Colon Hollow, near North Creek Campground, and along Middle Creek Road (Forest Road 3101) receive a great deal of hunting use during the

4K1 NORTH CREEK SPECIAL AREA

appropriate seasons, as well as other dispersed recreation uses such as wildlife viewing and hiking at other times of the year. Conversely, the southern and eastern portions of the management prescription are much more remote and recreation experiences here are more closely related to backcountry hiking and camping or wildlife viewing of forest interior species. Given this diversity, emphasis in the former areas relate to a Roaded natural recreation experience with management for common game species such as deer and turkey, while management in the latter areas relate to a semi primitive experience with management for forest interior species like the Peaks of Otter salamander. Accordingly, the areas within the Peaks of Otter Salamander Primary Habitat Conservation Area and Appalachian National Scenic Trail corridor are unsuitable for timber production. The remainder of the area is suitable for timber production. (See Figure 3.1).

DESIRED CONDITION:

This North Creek Special Area is managed to sustain a relatively high number of recreationists in a manner that protects the surrounding water, soil, vegetation, and wildlife, particularly the Peaks of Otter salamander within its habitat conservation area. (See Figure 3.2 in management prescription 8E2 for a map of the primary and secondary habitat conservation area.) Few areas offer this variety of recreation activities so accessible to the public. Visitors drawn from well outside the region may choose from a wide variety of well-maintained nature-based recreation opportunities including the developed campground in a rural setting, dispersed camping, day hiking, backpacking, fishing, hunting, and wildlife viewing in roaded natural to semi-primitive settings.

A combination of high quality forest roads and well-marked trails provide a variety of access levels for seniors, urban visitors, and recreationists with special access needs ranging from easy along the North Creek Road and in the developed campground to difficult along the steep mountain trails. The North Creek Road, FDR 59, provides the primary access into the interior of this area. The Colon Hollow Road (FDR 782), Thomas Mountain Road (FDR 768), and Apple Tree Road (FDR 3034) are also important access points leading to dispersed camping areas and trailheads. These roads and the Blue Ridge Parkway, Jennings Creek, Middle Creek and Parker Gap Roads, which surround the perimeter of the area, are maintained and improved to meet the growing demands for pleasure driving and to showcase the high quality scenery maintained throughout the area. Open road density will remain at current levels, with closed roads serving as wildlife linear strips, hiking trails, and emergency access.

The landscapes of the North Creek Special Area retain a natural, forested appearance. A regionally distinctive landscape features rock outcroppings, waterfalls, cascading mountain streams, and a structurally diverse mid- to late-successional forest community with a continuous forested canopy, with the exception of occasional pastoral and historic/ cultural enclaves. The valued character of the natural appearing and cultural landscapes appears intact with no noticeable deviations. The area is interspersed with forest communities of all seral stages and herbaceous openings providing both wildlife habitat and visual diversity.

The forest overstory include mixed mesophytic and mesic oak-hickory forests dominated by red, white, chestnut, and black oaks, as well as tulip poplar, sugar and red maples, and hemlocks depending on soils, geology, slope position, and moisture availability. The overstory is relatively closed, multi-layered, and moderately to densely stocked. Insects are actively suppressed around the high-use recreation areas of Colon Hollow and North Creek as well as within a half mile of existing roads. Where tree stocking is lower as a result of disturbances, there will often be a well-developed understory of mountain laurel, rhododendron, wild azalea, blueberry, wild grape, huckleberry, dogwood, and serviceberry. A variety of grasses and forbs are found within maintained wildlife openings, scenic vistas, and disturbed areas. Surrounding recreation areas and along scenic corridors, low intensity vegetation management may be occasionally employed.

Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides optimal to suitable habitat for black bear and other mid- to late-successional species including Peaks of Otter salamander, southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk. Wildlife species associated with early and mid- to late-successional deciduous forest habitats are expected to inhabit the areas classified as suitable for timber production, including eastern towhee, regal fritillary, white-eyed vireo, wild turkey, whitetail deer, ruffed grouse.

Across the Special Area, cove hardwood forests may be thinned to 60-80 square feet of basal area to provide habitat for cerulean warblers known to exist within the North Creek watershed. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. 4-10 percent of the areas classified as suitable for timber production is maintained in early successional habitat conditions. Vegetation management is also designed to maximize hard mast production, and to establish and maintain reproduction of a diversity of species, especially oaks, of mast bearing age in dominant and co-dominant crown classes. Trees with open-grown crowns receiving plenty of sunlight produce the most acorns and the creation of canopy gaps large enough to get full sunlight on the forest floor helps maintain oak regeneration as well as stimulate soft mast and browse production. Maintenance of habitat diversity is critical to provide soft mast and herbaceous vegetation to benefit a variety of early, mid, and late successional species.

Within the habitat conservation area of the Peaks of Otter Salamander, these activities would be carried out in accordance with the Habitat Conservation Agreement for the Peaks of Otter Salamander (August 26, 1997). Wildland fires are usually suppressed and use of prescribed fire is limited due to high visitor use and the infrastructure investments.

Both wild and stocked trout fishing continue as popular recreational activities. The reproducing population of wild trout, blacknose dace, fantail darter, and torrent sucker in North Creek and Cornelius Creek and their tributaries are sustained through maintenance and enhancement of fish cover, stream temperature, water chemistry, and stream structure. Fishing, swimming, hiking, camping, and other recreational pursuits in and near streams are balanced with the need to protect floodplain, stream channel, and aquatic habitat functions.

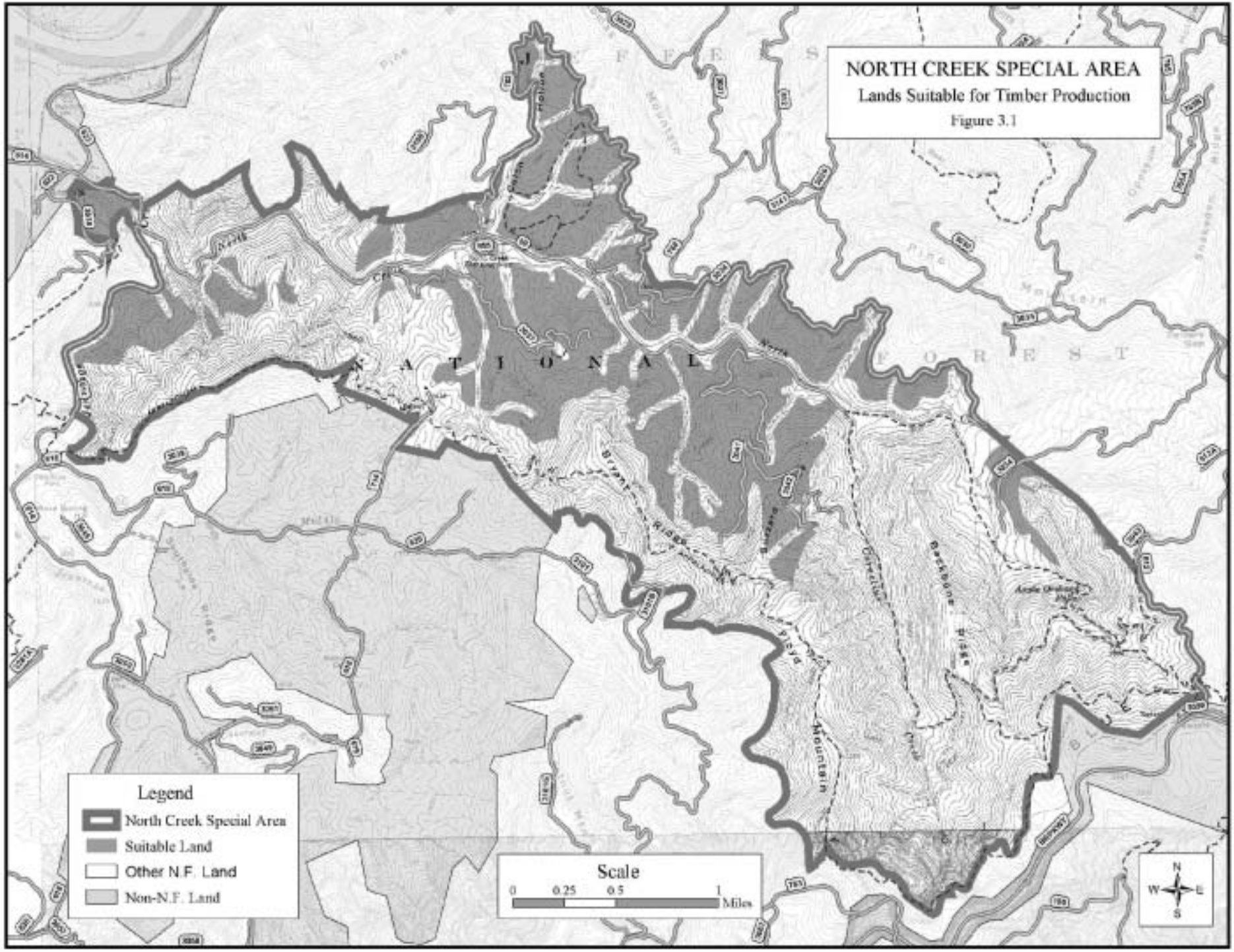
The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes. The foreground of the Appalachian Trail is unsuitable for timber production.

STANDARDS

Water, Soil, and Air

4K1-001 Water quality in the North Creek watershed is maintained at existing or higher levels in keeping with the Virginia designation for Exceptional Surface Waters.

4K1-002 Streambank stabilization, boardwalks, bridges, use restrictions or when no other option exists, area closures may be employed to protect floodplain, stream channel, and aquatic habitat functions.


NORTH CREEK SPECIAL AREA
Lands Suitable for Timber Production
Figure 3.1
Legend
North Creek Special Area
Suitable Land
Other N.F. Land
Non-N.F. Land
Scale
0
0.25
0.5
1
Miles
N
W
E
S

Terrestrial and Aquatic Species

4K1-003 Fish stocking is permitted in the lower reaches of North Creek, from the campground downstream.

4K1-004 Provide 4-10 percent of lands classified as suitable for timber production in early successional habitat conditions.

4K1-005 New wildlife openings and ponds are allowed. Existing wildlife openings may continue to be maintained.

Threatened, Endangered, And Sensitive Species

4K1-006 Within the Peaks of Otter salamander habitat conservation area, activities must comply with the Habitat Conservation Agreement. See Management Prescription 8E2 for Peaks of Otter salamander habitat conservation area management direction.

Vegetation and Forest Health

4K1-007 Existing form, line, color, and texture will be used to mitigate insect and disease effects on visually sensitive areas. This may include adjusting the shape of affected sites by feathering edge lines between disturbed and undisturbed areas and debris disposal.

4K1-008 Vegetation management adjacent to National Scenic and National Recreation trails is limited to that necessary for visitor safety, access or to enhance aesthetics. Vegetation management adjacent to other system trails may occur to achieve habitat objectives for early- and/or mid-late successional game species.

4K1-009 Strive to establish a rich variety of native wildflower species in wildlife openings, mowed roadsides, and timber harvest areas.

4K1-010 Allow vegetation management activities to:

- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat for hunting and/or viewing;
- Improve habitat for area-sensitive mid- to late-successional species;
- Enhance or rehabilitate scenery; including:
  - Create scenic vistas;
  - Create a pleasing mosaic of tree species of various densities and stem sizes;
  - Feature flowering trees, character trees, and shrub species;
  - Create park-like effects in the understory;
  - Enhance fall color species;
- Maintain, enhance, or restore the diversity and complexity of native vegetation;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Suppress or control insect and disease outbreaks;
- Provide for public health and safety.

4K1 NORTH CREEK SPECIAL AREA

Timber Management

Lands Classified as Unsuitable for Timber Production

4K1-011 Commercial timber harvest is not allowed within the **Peaks of Otter salamander primary habitat conservation area**. See Management Prescription 8E2a for Peaks of Otter salamander habitat conservation area management direction.

4K1-012 Outside of the **Peaks of Otter salamander primary habitat conservation area,** vegetation management may include commercial timber harvest as an appropriate method of reducing costs associated with these activities.

4K1-013 Clearcutting is only allowed where absolutely necessary to suppress or control active insect and disease infestations, including but not limited to southern pine beetle.

Lands Classified as Suitable for Timber Production

4K1-014 Lands classified as suitable for timber production within this area are shown on the Timber Suitability Map accompanying this Forest Plan.

4K1-015 Within the **Peaks of Otter salamander secondary habitat conservation area**, timber activities must comply with the Habitat Conservation Agreement. See Management Prescription 8E2b for Peaks of Otter salamander habitat conservation area management direction.

4K1-016 Regeneration harvest areas range in size from 2 to 40 acres.

4K1-017 Utilize coppice with reserves, two-aged shelterwoods, thinning, and/or group selection to accomplish habitat objectives within this area. Coppice with reserves will leave 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration. Two-aged silvicultural systems will leave 20-50 square feet of basal area per acre of 8-14 inch diameter high quality trees in order to provide vertical diversity and future mast production.

4K1-018 Clearcutting is only allowed where absolutely necessary to suppress or control active insect and disease infestations, including but not limited to southern pine beetle.

4K1-019 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-180
Cove hardwoods	120-180
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Wildland Fire Suppression

4K1-020 Lightning fires are generally suppressed to minimize acreage burned due to high levels of public use and infrastructure investments in these areas.

Prescribed Fire and Wildland Fire Use

4K1-021 Prior to prescribed burning in this area, consider specific locations of fire dependent and associated species as well as effects on scenery, recreation facilities, forest visitors, and the Peaks of Otter salamander.

Recreation

4K1-022 Dispersed camping is prohibited within 300 feet of North Creek and North Creek road.

4K1-023 Recreation opportunities include Rural around North Creek campground,

Semi-Primitive 2 in the eastern third of the area, and Roaded Natural in the remainder of the area. See Recreation Opportunity Spectrum Map accompanying the Revised Plan.

4K1-024 Where appropriate, interpretive services (trails, signs, brochures, viewing areas) are provided to enhance visitors' understanding and appreciation of the area's special values. Informational kiosks describing the Peaks of Otter salamander, its unique geographical distribution, its habitat, fragility, and conservation efforts are encouraged.

4K1-025 Maintain trail markers or blazes to provide clear trail route identification.

4K1-026 Manage National Scenic and Recreation trails for foot travel only.

4K1-027 Motorized access is limited to currently existing roads. These areas are unsuitable for designation of new OHV routes or ATV use areas.

Appalachian National Scenic Trail

4K1-028 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

4K1-029 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

Range

4K1-030 Livestock grazing is not permitted.

Minerals

4K1-031 The North Creek area is available for federal oil and gas leasing with controlled surface use to protect the recreation, aesthetic, and watershed values of the area, as well as Peaks of Otter salamander habitat. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on area resources and values.

4K1-032 This area is not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed primarily to administer the area, to restore riparian areas and aquatic habitat, to control erosion and sedimentation, and to repair flood damage.

Roads

4K1-033 New permanent road construction is not allowed, except:

- Where the new road is the only prudent alternative to serve resource needs in adjacent areas and will minimally impact this area;
- To relocate existing roads;
- To provide access to trailheads;

- To provide access to private land, including reserved or outstanding mineral rights, when other routes are not feasible or more deleterious to the environment;
- To protect public health and safety in the case of a catastrophic event;
- Subject to valid existing rights.

4K1-034 Open road density will be maintained at 1.0 miles per 1000 acres.

Lands and Special Uses

4K1-035 Locate new public utility rights-of-way and communication sites to areas of this prescription area where major impacts already exist. Limit linear utilities and rights-of-way to a single crossing of the prescription area, per project.

4K1-036 Organized recreation events are generally permitted within this area unless:

- They would likely result in a trend to federal listing or unacceptable harm to Peaks of Otter salamander;
- They would significantly affect stream channel stability, substrate, aquatic species or their habitats; and
- They would not be consistent with the social setting of the appropriate Recreation Opportunity Spectrum setting.

4K1-037 Other special uses are authorized if consistent and compatible with the goals and objectives of this area.

4K2 HOOP HOLE SPECIAL AREA

The Hoop Hole Special Area contains 4,400 acres and is located in western Botetourt County, northeast of the small community of Oriskany, Virginia. This area contains the Hoop Hole and Roaring Run National Recreation Trails, the Iron Ore Run trail and .several small creeks that drain into Craig Creek. This area is bounded by the summit of Rich Patch Mountain on the west, Pine Mountain and Roaring Run on the north, State Highway 615 on the east, and a common boundary with private land on the south.

The Hoop Hole Special Area contains significant historic, recreational, wildlife, and fresh water resources. This Special Area is managed to: 1) maintain, restore, and enhance aquatic and riparian processes, functions, and habitats; and 2) recognize, maintain, and enhance the historic, scenic, geological, and recreational values within this entire area. These lands are classified as unsuitable for timber production, although timber harvest to meet the long-term goals of the desired condition is appropriate.

DESIRED CONDITION:

The Hoop Hole Special Area is managed to sustain a moderate level of recreationists in a manner that protects the surrounding water, soil, vegetation, historic, and wildlife resources. The Roaring Run area hosts both local and regional visitors, however, the remainder of the Special Area receives low to moderate recreation use due to the steep slopes. Recreational activities include a developed picnic area at Roaring Run, day hiking on the trails, fishing, hunting, wildlife viewing, and historic investigation.

Primary access to this area's lower boundary is by State Route 615, a paved secondary road. In addition, Forest Development Road 740 (Roaring Run), accesses the developed picnic area by branching off of State Route 621 for a quarter mile to the parking areas. There is also a small parking area for the Hoop Hole trailhead off of State Route 615. Other than the previously mentioned roadways, the access to the remainder of this area is by foot travel. These roadways not only provide access to the recreational opportunities

within this area, but they also provide a color corridor for motorists during the peak of the fall foliage season. The vehicle traffic is light in this area while in contrast, the scenic qualities are very high. Further recreation development in the area is limited by the steep and shallow soils on the mid to upper slopes. With the exception of the Roaring Run picnic area and nearby roads, this area is provides a Semi-Primitive Non-Motorized (SPNM) ROS setting.

The historic settlement of this area has had a direct and lasting impact upon the local forest resources. During the 1830s, numerous stone iron furnaces were constructed in the Appalachian Mountain chain. Roaring Run contains a 1830's era iron furnace preserved in a very good condition. During the period of 1830-1870s, the mid to lower slopes of this area were clearcut to supply cheap fuel to make crude pig iron from the iron ore. Topographic evidence can still be seen along the trail system that winds through this area of decades of former logging and iron ore production. Since that era, the forest has recovered. At present, the forest communities of this Special Area contain a natural appearing landscape character. The astute forest visitor can also observe local rare geological features in the Deisher Mountain area. Rock formations are present that are exposed in terms of geological layers involving eons of pre-historic time. Educational and interpretive information is available to develop understanding of the history and biological communities of the area.

The present forested overstory includes mesophytic and mesic oak-hickory forests dominated by red, white, and scarlet oaks, as well as tulip poplar, red maples, and white ash at the mid and lower elevations. Scattered pockets of yellow pine are maintained by prescribed fire and wildland fire use. White pines are slowly replacing the Eastern hemlock (killed by the hemlock woolly adelgid) along the small creeks in the area. Cavity trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality. Some wildlife species associated with area sensitive mid to late-successional deciduous forest habitats expected to inhabit this area can include: ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides suitable habitat for game species such as wild turkey, gray squirrel, and black bear.

Vegetation management may be observed around the Roaring Run Picnic Area complex and the Hoop Hole trailhead parking area to eliminate or reduce the amount of undesirable vegetation. Up to 4 percent of the Special Area may be in early successional habitat conditions primarily along the existing road system. The area closest to State Route 615 contains stands currently between 25-30 years old. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities may be enhanced to benefit mid- to late-successional forest species like the ovenbird. Aside from these vegetation management activities, the natural processes will eventually result in a large block of late successional to old growth forests throughout most of this area.

This Special Area is unsuitable for commercial timber production, although the activities mentioned can be accomplished using commercial timber harvests, which can be small in size and short in duration. Use of prescribed fire is limited, but not entirely eliminated, in this Special Area due to the steep slopes and difficulty of fire line construction involved.

In normal rainfall years, there is an abundance of fresh water that will flow though the several small creeks within this Special Area. A few of the smaller creeks in this area are: Roaring Run, Deisher Branch, Crawford Branch, Wolf Branch, Stony Run and Hipes Branch. Both Stony Run and Hipes Branch are classified as native trout streams. Roaring Run is stocked as a "put and take" area from the picnic facility downstream and as a "put and grow" area from the third footbridge above the picnic area. Fishing, hiking, historic exploring, and bird watching in or near Roaring Run must be balanced with the overall need to protect the floodplain, to keep the stream channel clear of unnecessary debris from recurring floods, and to protect the aquatic habitat environs.

4K2 Hoop Hole Special Area

The public open road density will remain at current levels. The Hoop Hole/Roaring Run trail system is limited to foot travel only. No horses or mountain bikes are allowed. In addition, off-road vehicle use is prohibited within this entire Special Area in order to maintain the non-motorized setting of this area.

STANDARDS

Water, Soil, and Air

4K2-001 Streambank stabilization, footbridges, or use restrictions may be employed to protect floodplain, stream channel, and aquatic habitat functions.

Terrestrial and Aquatic Species

4K2-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

4K2-003 Manage the habitat of the native trout in order to maintain or increase their overall populations. Large woody debris and/or stream structures may be used for this purpose.

Rare Communities and Old Growth

4K2-004 All large, medium, and small old growth patches are maintained within these areas.

Vegetation and Forest Health

4K2-005 All integrated pest management methods of control are available to reduce or eliminate mortality from insects and diseases. Use the most effective control method.

4K2-006 Allow vegetation management activities to:

- Maintain developed recreation facilities, including roads and trails;
- Enhance or rehabilitate scenery, including:
  - Create or maintain scenic vistas along the trail system;
  - Enhance fall color species;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Restore, enhance, or mimic historic fire regimes;
- Reduce fuel buildups;
- Suppress or control insect and disease outbreaks;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

Timber Management

4K2-007 These lands are not suitable for timber production. Vegetation management

may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

Non-timber Forest Products

4K2-008 Cutting and removing of dead trees for fuelwood is permitted only along State Route 615. No vehicle access is permitted.

Wildland Fire Suppression

4K2-009 Wildland fire response is suppression with initial attack to minimize acreage burned. Suppression strategies will strive to minimize soil disturbance, as well as canopy and cover loss.

4K2-010 Minimize the use of mechanized equipment when suppression can be achieved with other methods. Avoid moist habitats during line construction when fire conditions allow.

4K2-011 Rehabilitate all firelines as quickly as possible through reseeding, mulching, or the addition of brush as needed.

Prescribed Fire and Wildland Fire Use

4K2-012 Vegetation management may be accomplished with management-ignited prescribed fire and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

4K2-013 New developed recreation facilities are not planned for the next 10 years.

4K2-014 Dispersed camping is prohibited within the day use area of Roaring Run Picnic Area.

4K2-015 This special area is primarily managed for the Semi-Primitive Non-Motorized (SPNM) Recreation Opportunity Spectrum setting, though actual ROS classes range from SPNM, to Roaded Natural (RN). The developed picnic area of Roaring Run is managed for RN. See ROS Map.

4K2-016 Where appropriate, interpretive services (trails, signs brochures, viewing areas) are provided to enhance visitors' understanding and appreciation of the area's special values.

4K2-017 Manage National Recreation trails for foot travel only.

4K2-018 This area is unsuitable for designation of new OHV routes or ATV use areas.

Scenery

4K2-019 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	VH	H	H	H	H	H	H

Range

4K2-020 Livestock grazing is not permitted.

Minerals

4K2-021 The Hoop Hole area is available for federal oil and gas leasing with a no surface occupancy stipulation to protect the roadless character of the area.

Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the resources and values of the area.

4K2-022 The Hoop Hole area is not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the area itself; and b) use is necessary to protect the area resources and values.

Roads

4K2-023 Do not permit road construction, subject to valid existing rights and leases. Road reconstruction and minor relocation are permitted after full consideration of effects on backcountry resources and values.

4K2-024 Existing open public roads are maintained at current levels to provide for public access and safety.

Lands and Special Uses

4K2-025 These areas are unsuitable for new linear rights-of-way and communication sites.

4K2-026 Existing special use authorizations are allowed to continue. Other new special uses are authorized if consistent and compatible with the desired condition of this area.

4K3 MOUNT ROGERS CREST ZONE SPECIAL AREA

The 5,100 acre Crest Zone is located in Grayson County, Virginia. The Mount Rogers Crest Zone is managed to: 1) maintain outstanding vistas and natural scenery; 2) protect and recover the federally endangered northern flying squirrel, rare salamanders, and other species that inhabit this area; 3) retain the unique mix of high elevation spruce/fir forest, northern hardwood forest, rhododendron, blueberries, open grasslands, bogs, and seeps; 4) provide a large tract of backcountry recreation opportunities; and 5) protect the Appalachian National Scenic Trail experience.

DESIRED CONDITION:

The Crest Zone is a unique landscape character in the southern Appalachians, consisting of a mix of open areas, shrubs and forests in the Mount Rogers high country. Approximately 2,200 acres of the area is in open area management providing outstanding vistas and natural scenery. Visitors from the local region and around the world come to enjoy the scenic features of the intermingled pattern of woods, rhododendron, rock outcrops, wind-blown trees and bald-like pasture in a high elevation setting, making this a popular destination. The visitor gets a feeling of being in a high, vast expanse with uninhibited views into three states. The “wild ponies” add a special interest for hikers, especially families with children.

There are spectacular views to the distant southern Appalachian Mountains in North Carolina, to the north across Iron Mountain and toward the valley of Virginia, to the west across Mount Rogers toward Whitetop Mountain, and to the east toward the Three Peaks region. The vast openness of this mountaintop area offers a unique recreation experience. While several of the trails in the area are heavily used, visitors can find remote, back-country experiences if they use less popular trails or visit mid-week. Several of the more heavily used trails in the area include portions of the Appalachian Trail and Virginia Highlands Horse Trail. Popular destinations in the area include Rhododendron Gap, Wilburn Ridge, Thomas Knob shelter, and the Scales. Recreational activities include horseback riding, hiking, backpacking, mountain biking, rock-climbing, hunting (deer, turkey, grouse), blueberry picking, and driving to the Scales. Motorized recreation access

occurs only at the Scales. Trails provide dispersed recreation opportunities with a minimum of facilities.

The Crest Zone is managed and monitored to absorb moderate to high levels of recreation use while protecting air, soil, water, wildlife, and vegetative conditions. Limitations of use will occur if the dispersed activity results in, or is expected to result in, negative effects to the local ecosystem. The Limits of Acceptable Change (LAC) process has been completed for the entire high country, including the Crest Zone. Specific objectives and standards from the LAC process are located in Chapter 4, Management Area 7.

The foreground the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

This area comprises one of the most diverse assemblages of flora and fauna in Virginia and ranks very high throughout North America. The Virginia Division of Natural Heritage states that it also "contains one of the greatest concentrations of rare species and significant associates of plant communities in the state." Biologists believe the healthiest population of the federally endangered northern flying squirrel in the state is located within this area. It is the northern limit of range for such species as Fraser fir, umbrella leaf, Weller's salamander, and pigmy salamander. Forest communities such as red spruce, red spruce/Fraser fir, red spruce/northern hardwood forest, and mountaintop balds found within this special area are also very rare in Virginia. Sensitive forest plants such as Blue Ridge St. John's wort, Roan Mountain rattlesnake-root and the state-rare long-stalked holly also occur here. Rhododendron is predominant near the Rhododendron Gap area. Blueberries and huckleberries are scattered throughout the Crest Zone. There are several species of native grasses in the open areas. Tree mortality as a result of Balsam woolly adelgid and other factors is evident in the Crest Zone.

The Crest Zone contains all or portions of three rare communities (See management prescription 9F). The largest area includes over 50 percent of the Crest Zone from Brier Ridge east to Wilburn Ridge and has one of the highest concentrations of rare species and significant plant communities in Virginia. Included are several globally rare plant species, the globally rare Fraser fir, and the federally endangered northern flying squirrel. The Big Wilson Creek rare community contains what may be Virginia's largest high elevation bog. Most of the wetland is coniferous, but a large clearing supports several rare plants. The Pine Mountain rare community includes the pastureland and boggy seeps located near the Scales. This area also contains several rare plants.

The vegetation composition of the area has changed dramatically over the last 100 years. In the early 1900's, the Crest Zone was northern hardwoods and Red spruce/Fraser fir. Widespread logging, human-caused fires, and grazing converted the forest into an open pasture area. The Forest Service completed acquisition of the Crest Zone in the early 1970's. Approximately 2,900 acres are maintained in spruce-fir and northern hardwood forest, including 260 acres of red spruce restored through natural regeneration and planting. Through cattle and pony grazing, limited herbicide use, prescribed fire, and mechanical cutting, approximately 2,200 acres are maintained in an open grassy condition to provide outstanding scenery and recreation, as well as optimum habitat for high elevation early successional species including the chestnut-sided warbler and golden-winged warbler. Grass/forb areas generally found on ridges and woodlands will be allowed to grow adjacent to wetlands and drainages. A variety of native grasses, sedges and forbs are maintained throughout the balds.

4K3 MOUNT ROGERS CREST ZONE SPECIAL AREA

The headwaters of several important trout streams start in the Crest Zone. These include Big Wilson Creek, Cabin Creek, Middle Fork Helton Creek, and Opossum Creek. Although these streams have lower acid neutralizing capabilities than streams flowing through limestone geologic formations, they are still productive at present with most streams still maintaining a pH in the lower 6 range. Native brook trout are found in the headwaters of these streams. Streams and riparian areas throughout the area are maintained or restored to forested conditions.

OBJECTIVES

4K3-OBJ1 Maintain approximately 2,200 acres in high elevation early successional habitat in the Crest Zone, including approximately 400 acres of high elevation bald restoration in this planning period.

4K3-OBJ2 Conduct 700-900 acres of prescribed fire per year on 2 to 4 year rotation.

4K3-OBJ3 Restore approximately 260 acres of the montane spruce-fir forest community within the planning period through 120 acres of natural regeneration and 140 acres of planting.

4K3-OBJ4 Develop a site-specific vegetation management plan within the planning period.

STANDARDS

Water, Soil, and Air

4K3-001 Fencing may be used to keep cattle and ponies out of sensitive areas. The bog at the headwaters of Big Wilson Creek will be protected from cattle disturbance as necessary. No new trails will be allowed in this area.

4K3-002 Trails will cross streams at hardened fords or bridges.

Terrestrial and Aquatic Species

4K3-003 Clumps of hawthorne and berry producing plants fir wildlife will be reserved during brush control operations within the bald areas.

4K3-004 Selected trout streams that are deficient of large woody debris may be improved through the placement of cover logs within the stream.

Threatened, Endangered, and Sensitive Species

4K3-005 All threatened, endangered and sensitive plant and animal populations will continue to be monitored for changes that might occur in their status.

Rare Communities and Old Growth

4K3-006 Protect rare communities according to management prescription 9F.

4K3-007 A vegetative corridor of Red spruce and Fraser fir will be planted to link spruce/fir stands on Cabin Ridge with those on Mount Rogers to promote gene flow for such species as the northern flying squirrel, Weller's salamander, and other wildlife species.

4K3-008 Fraser fir seedlings of Mount Rogers genetic stock that appear to be resistant to the Balsam woolly adelgid will be selected for restoration and corridor plantings.

Vegetation and Forest Health

4K3-009 Allow control of insect and disease outbreaks when necessary to protect the scenic and recreational values, to reduce hazards to visitors, or for safety and legal reasons. When actions are needed, first consider biological

controls, hand control methods, and pesticides. Slow-the-Spread, suppression, and eradication of non-native pests techniques are allowed.

4K3-010 Retain the unique mix of woods, rhododendron, blueberries, open grasslands, riparian zones, bogs and seeps considering historical and ecological factors. Maintain grass/forb areas on ridges and allow wetlands and drainages to succeed to woodlands. Native species are encouraged over non-natives. Non-native invasive plants are controlled and/or eradicated. Reclaim portions of the existing bald where brush has encroached.

4K3-011 Establish and maintain blueberry patches in areas where picking has historically occurred. These areas include along trails and near the Scales. Control blueberries in other areas if needed.

4K3-012 Maintain the rhododendron area near Rhododendron Gap. Intervention to prevent conversion to forest may be needed to maintain a healthy stand of rhododendron.

4K3-013 Manage open grasslands to maximize native oatgrass (Danthonia).

4K3-014 Open area management may include grazing, prescribed burning, mechanical cutting, and herbicides. Herbicides may be used when needed to control vegetation. Use is limited to stump spraying on ridge tops and side slopes.

4K3-015 Control non-native invasive vegetation through mechanical cutting and herbicides.

Timber Management

4K3-016 These lands are not suitable for timber management.

4K3-017 Timber harvest or timber stand improvement may be used for control or suppression of insect or disease outbreaks, to provide for visitor safety, or to help maintain the open landscape.

Non-Timber Forest Products

4K3-018 Collection of plant materials is only permitted where removal will benefit the health of native vegetation or accomplish the desired condition of this management prescription. Collection of mushrooms, nuts, and berries for personal consumption is permitted.

Wildland Fire Suppression

4K3-019 Wildland fire response is suppression with initial attack to control, contain, or confine the fire to the grassy balds and to minimize spread from the balds to adjoining woodland. Suppression strategies will strive to minimize soil disturbance.

4K3-020 Evidence of fire suppression lines will be obliterated and the area restored as soon as practicable. Avoid moist habitats during line construction when fire conditions allow.

Prescribed Fire and Wildland Fire Use

4K3-021 Prescribed fire and wildland fire use are emphasized to restore and maintain grassy balds. Fire is applied at varying intensities to achieve resource objectives.

4K3-022 Prescribed fire and wildland fire use are designed to remove encroaching shrubs and/or trees and to improve forage quality and quantity for wildlife and livestock.

Range

4K3-023 Livestock grazing will be used to supplement other vegetation management techniques in the Crest Zone.

4K3-024 Access by livestock to springs, streams and bogs will be controlled by fencing except where access is required for livestock water and no apparent damage is occurring. Impacted areas will be hardened or fenced off.

Recreation

4K3-025 This special area is primarily managed for the Semi-Primitive Non-Motorized (SPNM) Recreation Opportunity Spectrum setting, though actual ROS classes range from Semi-Primitive Non-Motorized (SPNM), to Roaded Natural (RN). An area around the Scales and Middle Fork Helton Creek road is managed for Roaded Natural. An area at the bottom of Middle Fork Helton Creek Road is managed for Rural. See ROS Map.

4K3-026 Group size is limited to ten people at one time. This applies to day use or overnight use.

4K3-027 No new overnight structures are allowed in this area. Existing overnight structures may be rehabilitated, replaced or relocated if needed.

4K3-028 These areas are unsuitable for designation of OHV routes or ATV use areas. Motorized administrative use is permitted.

4K3-029 No new trails will be built in this area. Relocations and reconstruction of existing trails are permitted.

4K3-030 Trails open to horses may be maintained utilizing heavy equipment. Crushed stone may be applied as needed to harden horse trails. In highly visible open areas, the use of crushed stone that is an earth tone color is encouraged when possible.

4K3-031 Horses, mules and mountain bikes must stay on designated system trails or roads.

4K3-032 Directional signing along trails will be complimentary and blend into the natural surroundings.

Appalachian National Scenic Trail

4K3-033 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

4K3-034 Manage the Appalachian Trail for foot travel only.

Scenery Management

4K3-035 Management activities are designed to meet or exceed the following Scenic Integrity Objectives:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Roads

4K3-036 Do not permit road construction, subject to valid existing rights and leases. Road reconstruction and minor relocation are permitted after full consideration of effects on special area resources and values.

4K3-037 Existing open public roads are maintained at current levels to provide for public access and safety.

Minerals

4K3-038 The area is administratively unavailable for oil and gas leasing and leasing of other Federal minerals.

4K3-039 The area is not available for mineral materials for commercial or personal use purposes. Administrative or free use of mineral materials is allowed when: a) the materials are used within the Crest Zone; and b) use is necessary to protect the values of the Crest Zone.

4K3-040 Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible.

Lands and Special Uses

4K3-041 These areas are unsuitable for utility corridors or communication sites.

4K3-042 Existing special use authorizations are allowed to continue. Authorize other special uses, like outfitter/guide operations, if consistent and compatible with the desired condition of this area.

4K4 WHITETOP MOUNTAIN SPECIAL AREA

The 5,100 acre Whitetop Mountain Special Area includes portions of Grayson, Smyth and Washington counties. The summit of the mountain, extending to 5,560 feet, forms the second highest peak in the state. By comparison, the vertical elevation that occurs between the South Holston River near Damascus, VA and the summit of Whitetop is about 4,000 feet and may be compared to that found between Denver and the crest of the Front Range of the Rockies.

The Whitetop Mountain Special Area contains many significant biological, ecological, recreational, social and economic values. The area will be managed to 1) recognize, restore, enhance, protect, and maintain the unique biological diversity; 2) maintain and enhance the high value dispersed recreation uses and scenic values of the area including the Appalachian National Scenic Trail; and 3) restore, enhance and maintain habitat for threatened, endangered, sensitive and locally rare species such as the northern flying squirrel, Weller's salamander, Gray's lily, etc.

DESIRED CONDITION:

This special area is one of the most visited sites on the Mount Rogers National Recreation Area (NRA) for local and regional visitors seeking exquisite scenic views, picnicking, hiking, wildlife viewing, star gazing, photography, horseback riding, hunting, fishing, camping, snow skiing, or the traditional use of simply driving up to the summit for pleasure.

The area sustains a relatively high number of recreation visitors and the surrounding natural vegetative communities, water, soils, and wildlife will be protected. Visitors access the Whitetop Mountain Special Area via Forest Service Road (FSR) 89, State Routes 600, 601 and 783 for a variety of dispersed recreation activities. State Route 600 is part of the Mount Rogers Scenic Byway and roadside improvements to enhance visuals may include open area reclamation and conversion of wire fences to rail fences. FSR 89, a spur off the Mount Rogers Scenic Byway and the highest elevation road in Virginia, provides a unique opportunity for motorized access to a high elevation bald with outstanding views. It has the highest visitor use of any road on the Mount Rogers National Recreation Area.

4K4 WHITETOP MOUNTAIN SPECIAL AREA

Attractive stonewalls or wooden fences are evident along sections of FSR 89 to prevent vehicles from traveling off the road and damaging rare plant communities.

Equestrians and hikers share the use of such trails as the Virginia Highlands Horse Trail (VHHT), Elk Garden Trail, Helton Creek, Helton Creek Spur and Sugar Maple Trail located within this area. The Virginia Highlands Horse Trail begins at the Elk Garden Trailhead, one of the busiest trailheads on the NRA with direct access to any trail in the Mount Rogers high country. The Elk Garden Trail will continue to be the only trail within this area open to mountain bikes, equestrians and hikers. Horse, mule, and mountain bike use are permitted on designated trails only. User-created trails are closed as soon as possible and the appropriate steps taken to prevent them from being reopened.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes. The Appalachian National Scenic Trail and the Lovers Leap Trail are open only to hikers.

This area comprises one of the most diverse assemblages of flora and fauna in Virginia and ranks very high throughout North America. It is the northern limit of range for such species as Fraser fir, umbrella leaf, Weller's salamander, pigmy salamander, and shovel-nosed salamander. Rare forest plants such as the globally rare Mountain bittercress, and the state-rare Slender wood reedgrass. Whitetop Mountain supports the best representative stand of red spruce in Virginia that is more than 150 years old. Red spruce is expected to spread naturally over time down the slopes and eventually occupy more of the present northern hardwood sites to form mixed stands. Approximately 2,130 acres are maintained in spruce-fir and northern hardwood forest, including 900 acres of red spruce restored through natural regeneration.

The mid to lower slopes of the Whitetop Mountain Special Area are dominated by northern hardwood types composed of mixed and sometimes more pure stands of sugar maple, yellow & black birch, yellow buckeye, American beech, northern red oak and Eastern hemlock. Downed logs are evident across the forest floor providing habitat for the many salamanders and other wildlife species that occur here. Existing old growth stands are protected and additional old growth is allowed to develop within all forest types. Small stands of old growth black birch and sugar maple are found in the most remote, inaccessible areas. There is also a significant, unusual community of dwarfed northern hardwoods (submesotrophic scrub) located within this area (see management prescription 9F).

One of the best concentrations of the federally endangered northern flying squirrel in the state is located within the red spruce and red spruce/northern hardwood communities of this area. These forests support populations of two state rare amphibians, Weller's salamander and Pigmy salamander. The red spruce forest is the breeding site of five state-rare bird populations, including the Hermit Thrush, Magnolia warbler, Golden-crowned kinglet, Red-breasted nuthatch, and the Winter wren. The Red crossbill and purple finch, state species of special concern, may also nest in this area.

There are two mountaintop balds within the Whitetop Mountain Special Area. Here, visitors get the feeling of being in a vast expanse from the uninhibited views on a clear day, where they can easily view portions of three states. Whitetop bald is approximately 125 acres in size and extends down the south slope of Whitetop to approximately 5,000 feet elevation near Buzzard Rock. Elk Garden bald is approximately 80 acres in size and

lies in the saddle between Whitetop and Mount Rogers along State Route 600. Both of these locations with unique landscape character were recorded as open in the mid 1700's but their origin is sometimes a subject of dispute. These balds have similar rare vegetation including Gray's lily, Blue Ridge St. John's wort, and Roan Mountain rattlesnake-root. Three-toothed cinquefoil has only been found at Whitetop and is the largest population in Virginia. Both have a history of grazing since European settlement. Whitetop bald has not been grazed since the Forest Service acquired this area. Elk Garden bald is presently grazed to maintain its open pastoral character and the scenic vista. Both balds show signs of reverting to forested area in the absence of control efforts for the encroachment of shrubs and trees. These areas provide optimum habitat for high elevation early successional species including the chestnut-sided warbler and golden-winged warbler.

A variety of native grasses, sedges and forbs are maintained throughout the balds. Native species such as Danthonia are encouraged over non-natives and managed to insure their perpetuation for generations to come. Remedial steps are taken to insure the bald does not revert to a shrub or forest dominated community except on the extreme north edge of Whitetop bald where red spruce will be encouraged to reforest several acres of the bald area. Non-native invasive plants are controlled and/or eradicated. Selected portions of the existing bald where brush has encroached are reclaimed. Outbreaks of insects and disease are actively studied and suppressed where possible.

The headwater streams that flow from the slopes of the Whitetop Mountain have exceptional water quality, support some of the best trout waters in the state, and also provide habitat for a number of rare aquatic organisms. Eroding soils are rehabilitated and maintained as necessary to prevent soil movement. Area trails are located on suitable grades with effective drainage and are well maintained to prevent erosion. Illegal off-road vehicle use into the balds are minimized or eliminated with the use of barriers or other management practices, techniques, and law enforcement.

The Whitetop Special Area is the primary source for the collection of Sugar maple sap and wild leeks (ramps) that support local festival fund raising events for nearby fire departments and life saving crews. Such festivals are growing in numbers of participating visitors each year. This increasing demand is monitored for impacts to these biological resources.

There are no developed recreation facilities within this area except one trailhead parking lot at Elk Garden and two on Whitetop Mountain. These may be improved to meet visitor demand and protect resources. No new developed recreation are planned in this area. Interpretive services (trails, signs, brochures, viewing areas and bulletin boards) are provided to enhance visitors' understanding and appreciation of the area's special biological and ecological values. Informational kiosks describing the rare plants and animals, their habitat, threats, and conservation efforts are encouraged.

The communication uses on the summit of Whitetop continue to operate under special use authorization until other more suitable, affordable technology is available to replace these uses. Opportunities for complete removal of this site and the restoration of the summit to red spruce forest is a long-term goal. Burial of the above ground power lines within the existing access road is a short-term goal.

OBJECTIVES

4K4-OBJ1 Maintain approximately 235 acres in high elevation balds on Whitetop and Elk Garden, including approximately 55 acres of restoration in this planning period.

4K4-OBJ2 Conduct prescribed fires at 2 to 4 year intervals.

4K4 WHITETOP MOUNTAIN SPECIAL AREA

4K4-OBJ3 Restore approximately 900 acres of the montane spruce-fir forest community within the planning period through natural regeneration.

4K4-OBJ4 Analyze a boardwalk interpretative trail to replace the Lover's Leap Trail and loop through a small portion of the red spruce forest, in order to protect rare species.

STANDARDS

Terrestrial and Aquatic Species

4K4-001 Maintain existing wildlife clearings. They may be expanded through mowing, cultivation, and prescribed burning.

4K4-002 Reserve clumps of hawthorne and berry producing plants during brush control operations within the bald areas for wildlife.

4K4-003 Selected trout streams that are deficient of large woody debris may be improved through the placement of cover logs within the stream.

Threatened, Endangered, And Sensitive Species

4K4-004 Improve salamander habitat by falling selected trees in areas where coarse wood does not average a minimum of 15 pieces per acre from natural causes. These pieces of coarse wood should have a minimum small end diameter of 8 inches, a minimum length of 10 feet and be relatively evenly spaced over the landscape.

Rare Communities and Old Growth

4K4-005 Protect rare communities according to management prescription 9F.

Vegetation and Forest Health

4K4-006 Integrated pest management techniques may be employed for control of insects and disease threatening forest health.

4K4-007 Design management projects to prevent non-native invasive plant introduction into this area.

4K4-008 Prescribed fire, chain sawing, mowing, grazing and hand-applied herbicides are considered primary treatment options for vegetation management within the balds. Aerial spraying of herbicide is not permitted.

4K4-009 Vegetation management along the Appalachian National Scenic Trail and the scenic byway is intended to improve visitor safety and enhance the scenic views.

4K4-010 Flowering and fruiting trees, trees with good fall color, and character trees are selected as leave trees within the bald areas.

Timber Management

4K4-011 These lands are not suitable for timber management.

Non-Timber Forest Products

4K4-012 Collection of blueberries, mushrooms and wild leeks (ramps) for personal consumption are allowed without permit. Permits are required for such products if they are to be sold.

4K4-013 The cutting of firewood is prohibited within this area.

Wildland Fire Suppression

4K4-014 Wildland fire suppression response minimizes the spread from the balds to adjoining woodland. Suppression strategies will strive to minimize soil disturbance.

4K4-015 Evidence of fire suppression lines will be obliterated as soon as practicable. Avoid moist habitats during line construction when fire conditions allow.

Prescribed Fire and Wildland Fire Use

4K4-016 Prescribed fire and wildland fire use are emphasized to restore and maintain open areas. Fire is applied at varying intensities to achieve resource objectives.

4K4-017 Prescribed fires are designed to remove encroaching shrubs and/or trees and to improve forage quality and quantity for wildlife and perpetuate threatened, endangered, and sensitive species.

Recreation

4K4-018 Trail reconstruction and relocation consider the effects on rare species and their habitats.

4K4-019 Maintain trail markers or blazes to provide clear trail route identification for dense fog conditions.

4K4-020 Motorized access is limited to open roads only. These areas are unsuitable for designation of new OHV routes or ATV use areas.

4K4-021 Horses, mules and mountain bikes must stay on designated system trails or roads.

4K4-022 The Whitetop Mountain area including FSR 89, the Appalachian Trail, Whitetop bald, and the red spruce forest are closed to horse and mule use.

Appalachian National Scenic Trail

4K4-023 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery Management

4K4-024 Management activities are designed to meet or exceed the following Scenic Integrity Objectives:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Roads

4K4-025 Do not permit road construction, subject to valid existing rights and leases. Road reconstruction and minor relocation are permitted after full consideration of effects on special area resources and values.

4K4-026 Existing open public roads are maintained at current levels to provide for public access and safety.

4K4 WHITETOP MOUNTAIN SPECIAL AREA

4K5 WHITETOP LAUREL CREEK SPECIAL AREA

Range

4K4-027 Livestock grazing is used to supplement other vegetation management techniques in the Elk Garden bald and the pastures along Helton Creek.

4K4-028 Livestock access to springs and streams is controlled by fencing except where access is required for livestock water. These sites are to be hardened if monitoring shows that significant impacts are occurring.

Minerals

4K4-029 The area is not available for oil and gas leasing or other Federal mineral leases.

4K4-030 The area is not available for mineral materials for commercial or personal use purposes. Administrative or free use of mineral materials is allowed when: a) the materials are used within the Whitetop Mountain; and b) use is necessary to protect the values of the Whitetop Mountain.

4K5 WHITETOP LAUREL CREEK SPECIAL AREA

The majority of the 4,200 acre Whitetop Laurel Special Area is located in Washington and Grayson Counties, including the national forest portion of the Virginia Creeper Trail. Primary recreation, aquatic and biological features within this Special Area include: the Virginia Creeper National Recreation Trail (including two staffed visitor centers), Appalachian National Scenic Trail, Whitetop Laurel Accessible Fishing Trail, Taylors Valley Trail, and Saunders Trail; Mount Rogers Scenic Byway; Whitetop Laurel Creek, a blue-ribbon trout stream, and Green Cove Creek; and Whitetop Laurel Slopes, a 42-acre Special Biological Area supporting a rare community.

The Whitetop Laurel Special Area is managed to: 1) recognize, maintain and enhance the high value of scenery and recreation uses throughout the area; 2) maintain, restore and enhance aquatic and riparian processes, functions and habitats; 3) protect Whitetop Laurel Slopes, a Special Biological Area; 4) recognize and protect the historic and cultural values of the area; and 5) protect and perpetuate the outstandingly remarkable values that led to Whitetop Laurel Creek's status and classification as a "recreational" Wild and Scenic River candidate.

DESIRED CONDITION:

Whitetop Laurel Creek has created a gorge from Creek Junction to Taylors Valley, with steep rocky sideslopes, numerous contributing tributaries, and dense vegetation. This steep landscape with a prominent cascading stream is intrinsically beautiful, has a rich cultural heritage of particular interest to railroading enthusiasts, and is a major draw to recreationists and naturalists. History buffs are drawn to the Virginia Creeper Trail, once part of the Virginia-Carolina Railway and later the Abingdon Branch of the Norfolk & Western Railway. This obscure country line was made famous by O. Winston Link who captured the last days of the steam engine in published photographs.

The Whitetop Laurel Special Area sustains a high number of visitors by maintaining and enhancing the scenic, aquatic, biologic and cultural values of the area as well as the recreation resources and facilities. The high profile trails and trout stream within the area draw visitors primarily from the tri-state region of Virginia, North Carolina and Tennessee. Dispersed recreation use is expected to rise, and management addresses that growing demand and strives to fulfill visitor expectations with facilities of an appropriate development level. Nature and history based recreation opportunities provided include hiking, biking, horseback riding, fishing, hunting, wildlife viewing, birding, scenic driving, picnicking, and history tracking. Cross country skiing may occur on ungroomed trails.

The majority of the recreation is categorized as dispersed use except for the scenic byway, two visitor centers and several trailhead parking facilities on the Virginia Creeper Trail that are fairly highly developed. Recreation use ranges from heavy use on the Virginia Creeper Trail to light use on the lesser known Saunders and Taylors Valley Trails. Apart from the scenic byway, all recreation within this area is non-motorized. The Mount Rogers Scenic Byway affords close foreground views of the cascading Whitetop Laurel Creek. Structures, signs, and other facilities associated with recreation are designed and maintained to blend in with and be complementary to the surrounding landscape or support an established, historic image.

The foreground the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Green Cove Creek and Whitetop Laurel Creek support exceptional populations of wild trout. Whitetop Laurel has been designated as a blue-ribbon trout stream. It is situated in a beautiful setting, making it one of the most popular angler destinations in the state. This stream attracts local anglers but also draws people from surrounding states. Some segments of the stream are restricted with “Special Trout Regulations” while others are managed under regulations for stocked trout waters. There are several rare aquatic species found in the waters of Whitetop Laurel Creek and its tributaries including Tennessee dace, fatlips minnow, green-fin darter, and the Eastern hellbender. A 10.5 mile segment of this stream is eligible for designation as a Recreation River in the Wild and Scenic Rivers Program. Also, a three-mile segment of this stream has been designated as Exceptional Waters by the Virginia Department of Environmental Quality. Whitetop Laurel and its tributaries are managed to protect water quality, habitats of rare aquatic species and this important trout fishery.

The landscape is predominantly comprised of mid- to late-successional forest community except in the location of recreation facilities, managed wildlife openings, and traditional open areas such as pastures. The forest possesses multiple layers to provide visual diversity. Rhododendrons, mountain laurel, dogwood, redbud and other flowering shrubs and trees occur along portions of the scenic byway and the Virginia Creeper Trail. A variety of grasses and forbs are found within maintained wildlife openings, scenic vistas and cultural areas. Wildlife openings along trails provide wildlife viewing and hunting opportunities. Wildlife openings immediately adjacent to trails and roads mimic meadows, pastures and other open areas found throughout the area.

An area known as Whitetop Laurel Slopes contains a rare plant community on a southwest-facing spur ridge on the steep slopes of Whitetop Laurel. This 42-acre rare community supports a significant open-canopy glade in a white ash/hickory woodland (see management prescription 9F). Chief among the species present at this site is the state-rare shrub streambank mock-orange (Philadelphus hirsutus). Vegetation and soils within the community are strikingly different than that of the surrounding slopes.

Vegetative patterns, such as undulating woods lines and road and trailside park-like meadows may be created and/or maintained. Vista points along popular travel corridors are established and maintained to enhance scenic viewing of Whitetop Laurel and Green Cove Creeks and/or their tributaries, mountain scenery, pastoral landscapes, and remnants of the Virginia Creeper facilities such as watering stations. Species with vibrant spring flowering and fall color characteristics are featured. Insects and diseases causing forest health problems are suppressed. Areas damaged by insects, disease or fire are

rehabilitated. The valued character of the natural appearing and cultural landscapes are either intact or appear intact to the casual observer. Traditional open areas, such as pastures, are retained. Wildland fires are typically suppressed to safeguard the infrastructure investments.

Forest roads and well-marked trails through these areas provide easy to moderate access for the public. A range of difficulty levels among the trails will be provided with opportunities being available for seniors, families with young children and persons with disabilities, as well as people seeking a challenging opportunity.

STANDARDS

Water, Soil, and Air

4K5-001 Streambank stabilization, maintenance of existing footbridges and trail trestles, and/or use restrictions will be employed to protect floodplain, riparian areas, the stream channel and aquatic habitat functions.

Terrestrial and Aquatic Species

4K5-002 Improvements are allowed for enhancing aquatic habitats and the viewing of aquatic species.

4K5-003 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur in order to enhance terrestrial wildlife viewing opportunities and the viewing of scenery.

Rare Communities and Old Growth

4K5-004 Protect the rare community known as Whitetop Laurel Slopes, including the population of streambank mock-orange according to management prescription 9F.

4K5-005 Interpretation of rare communities is encouraged when carefully controlled to promote understanding and stewardship as well as to enhance the recreational experience.

Vegetation and Forest Health

4K5-006 Reduce or control insect and disease using integrated pest management.

4K5-007 Allow vegetation management activities to:

- Maintain developed recreation facilities, including roads and trails;
- Enhance or rehabilitate scenery, including:
  - Create or maintain scenic vistas along the trail systems and scenic byway;
  - Showcase spring flowering and fall color shrub, vine and tree species;
- Enhance game and non-game wildlife habitat;
- Improve habitat for threatened, endangered, sensitive and locally rare species habitat;
- Maintain rare communities/species dependent on disturbance;
- Restore, enhance or mimic historic vegetative patterns where desired around cultural features;
- Reduce fuel buildups;

- Control non-native invasive vegetation.
- Provide for public health and safety .

Timber Management

4K5-008 These lands are not suitable for timber production. Commercial timber sales may be appropriate when it is the most practical or economically efficient method to manage vegetation.

Non-Timber Forest Products

4K5-009 Removal of plant materials (moss, vines, shrubs, etc.) is generally incompatible with the management of this area, but may be permitted where such removal would be beneficial for forest health. Do not permit collection of herbs for commercial use. Removal of seeds, berries, nuts and mushrooms for domestic use is allowed.

4K5-010 Removal of dead and down trees only for fuelwood is permitted.

Wildland Fire Suppression

4K5-011 Lightning fires are generally suppressed to minimize acreage burned due to high levels of public use and infrastructure investments in these areas.

4K5-012 Use existing fire barriers or control lines where possible. Fire line construction will consist of the least ground disturbing method necessary for control. Favor handlines or wet lines where possible and waterbar and revegetate lines as soon as practical following the incident.

Prescribed Fire and Wildland Fire Use

4K5-013 Vegetation management may be accomplished with management-ignited prescribed fire and mechanical treatments as an appropriate method of reducing costs associated with these activities.

4K5-014 Plan prescribed fires to use existing barriers, e.g., streams, lakes, wetlands, roads, and trails, to reduce the need for fire line construction.

Recreation

4K5-015 This special area is managed primarily for the Roaded Natural (RN) Recreation Opportunity with a small area of Rural (R). See ROS Map.

4K5-016 New developed recreation facilities are not planned for the next ten years.

4K5-017 Maintain existing developed trailhead parking and, if necessary, expand to meet visitor demand. Restroom facilities will be provided for protection of resources and the comfort and convenience of visitors.

4K5-018 Maintain existing visitor centers and, if deemed desired and necessary, enhance (i.e., air conditioning added, interpretive exhibits expanded, etc.) to meet visitor expectations.

4K5-019 Dispersed camping is allowed throughout the Whitetop Laurel Special Area, except it is prohibited within 300 feet of trailhead parking facilities and visitor centers.

4K5-020 Camping is discouraged within 100 feet of trails and streams.

4K5-021 The document entitled *Management Guidelines for the Virginia Creeper Trail* is to be consulted for decisions related to proposals for new construction, reconstruction or rehabilitation of structures, tread, site amenities, signs and other trail features and for new or amended management policies on the Virginia Creeper Trail.

4K5-022 These areas are unsuitable for designation of new OHV routes or ATV use areas, unless crossing the area is the only feasible alternative or results in less environmental impact.

Appalachian National Scenic Trail

4K5-023 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery Management

4K5-024 Landscape character classes maintained within this Area include Natural Appearing, Rural Forested and Rural-Pastoral. Some Transitional-Mixed Use occurs in areas of community interface.

4K5-025 Management activities are designed to meet or exceed the following Scenic Integrity Objectives:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Roads

4K5-026 Do not permit road construction, subject to valid existing rights and leases. Allow road reconstruction to improve recreational access, to improve soil and water, to protect property or for public safety.

4K5-027 Existing open public roads are maintained at current density levels to provide for public access and safety.

Range

4K5-028 Livestock grazing is not permitted.

Minerals

4K5-029 This Area is available for federal oil and gas leasing with a no surface occupancy stipulation. Other Federal minerals are not available.

4K5-030 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed primarily to administer the area, to restore riparian areas and aquatic habitat, to control erosion and sedimentation, and to repair flood damage.

4K5-031 Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible.

Lands and Special Uses

4K5-032 Allow utility structures, such as new transmission, gas or water lines, only in the location with the least impacts to scenic integrity and water resource quality.

4K5-033 Existing special use authorizations are allowed to continue. Allow other special uses when consistent and compatible with protection of the scenic, recreational, biological and historic values of the area.

4K6 NORTH FORK OF POUND SPECIAL AREA

The 5,500 acre North Fork of Pound Special Area is located in northwestern Wise County, Virginia. This area comprises the watershed for North Fork of Pound Reservoir which serves as the municipal water supply for the community of Pound. The 120 mile Pine Mountain Trail (designated Kentucky's Millennium Trail) from Breaks Interstate Park to Cumberland Gap Historical Park passes through the area. A federal oil and gas lease issued in 1984 covers most of this area and is currently in effect, held by production.

The North Fork of Pound Special Area contains significant recreation, scenic, water, and historic values. The North Fork of Pound Special Area is managed to: 1) recognize, maintain, and enhance the high value dispersed and developed recreation uses and scenic values throughout the area; 2) maintain healthy watersheds that provide clean drinking water, 3) maintain, restore, and enhance aquatic and riparian processes, functions and habitats; and 4) recognize, maintain, and enhance the history of the North Fork of Pound mountain community heritage before the area was flooded and the reservoir was constructed.

DESIRED CONDITION:

This area provides large tracts of backcountry recreation opportunity with a semi-primitive emphasis. Roads constructed for natural gas development are closed and available for both non-motorized uses as well as administrative access. Hiking, backpacking, mountain bike riding, rock climbing, nature study, hunting, and fishing are typical activities available in a setting where freedom from the sights and sounds of modern civilization is important. Visitors see evidence of natural gas development activity including wells and roads. However, those wells no longer producing and roads no longer needed are rehabilitated and returning to forested conditions. Other humans or human activities other than backcountry recreation use, maintenance of wildlife openings, and occasional prescribed burning are not evident. Outdoor skills and self-reliance are important for visitors because of the remoteness of this area.

The surface and ground water flowing from the North Fork of Pound source water protection area meets or exceeds all Federal and State requirements for safe drinking water. Streams reflect the physical, chemical, and biological structures that sustain high quality water. Forest management activities within this area are designed to protect drinking water sources. Practices to prevent contamination of drinking water sources are applied and monitored. Riparian corridors are maintained, restored, and enhanced to maximize water quality. Channeled ephemeral stream zones are managed as part of the riparian corridor within this watershed. Management activities that concentrate pollutant transport to streams or water bodies are mitigated and promptly rehabilitated to reduce impacts.

Significant potential sources of drinking water contamination are identified and the susceptibility of the water supply to contamination from these sources is determined. Existing trails, developed and dispersed recreation sites, and areas of concentrated recreation use are examined and problems mitigated.

The landscape character of this area is primarily shaped by natural processes (floods, storms, insects, diseases, and fires). Landscapes feature a structurally diverse mid - to late-successional forest community with a continuous forested canopy, with the exception of occasional pastoral and historic/cultural enclaves (old home, church, and school sites). The valued character of the natural appearing and cultural landscapes appears intact with no noticeable deviations.

These areas are characterized by a predominance of mid- and late-successional forests

with multiple canopy layers, which provide a variety of habitat niches and thermal and protective cover for wildlife. Snags used by birds, bats, and small animals are abundant. Dying and down trees are common, often in natural patches. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the backcountry recreation and source water protection objectives of these watersheds. These early successional habitat conditions may be created through a combination of prescribed fire, wildland fire use, and permanent wildlife habitat improvements. Prescribed fire and wildland fire use also play an important role in the maintenance of forested communities found throughout this management prescription. Aside from these management activities, natural processes will eventually result in a large patch old growth forest matrix throughout most of this area, interspersed with both naturally occurring and man-made brushy and herbaceous openings.

Wildlife species associated with area-sensitive mid- to late-successional forest habitats that are expected to inhabit this area include: ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides suitable habitat for black bear.

These lands are classified as unsuitable for timber production and timber harvesting rarely occurs unless necessary to contain an insect or disease outbreak or slow the spread of an non-native invasive pest. Salvage of dead and damaged trees may occasionally occur to reduce fuel build-ups or to manage outbreaks of insects and diseases; however, it is limited to areas with existing road access as any road construction is prohibited.

Road density is less than ½ mile per 1000 acres, with closed roads serving as fire breaks, wildlife linear strips, hiking trails, and administrative access. An existing federal oil and gas lease, as well as reserved and outstanding mineral rights, exists within this watershed. Access and facilities necessary to exercise these leases and rights are engineered to prevent contamination of drinking water sources and are managed as closed to public motorized travel. Other than associated with these existing lease and rights, new roads are not constructed.

STANDARDS

Water, Soil, and Air

4K6-001 Channeled ephemeral stream zones are managed as part of the riparian corridor.

Terrestrial and Aquatic Species

4K6-002 Existing old fields, wildlife openings, and other terrestrial and aquatic habitat improvements for fish and wildlife may be present and maintained to enhance wildlife viewing, hunting, and fishing opportunities with riparian and drinking water protections accorded.

4K6-003 Expansion of wildlife openings or creation of new permanent wildlife openings by noncommercial timber cutting is allowed, but both existing and new cannot exceed more than four percent of the area. Non-invasive non-natives plants are sometimes used, but native species are preferred when establishing food plots for wildlife. Some openings are managed to provide permanent shrub/sapling habitat as a result of longer maintenance cycles to meet early successional habitat wildlife needs.

Rare Communities and Old Growth

4K6-004 Rare communities requiring disturbance are maintained through wildland fire use, prescribed fire, or felling and leaving of trees.

4K6-005 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

4K6-006 Allow vegetation management activities to:

- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Restore, enhance, or mimic historic fire regimes;
- Reduce fuel buildups;
- Suppress or control insect and disease outbreaks;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

4K6-007 Allow control of insect and disease outbreaks when necessary to protect the values for which the area was established, to reduce hazards to visitors, or for safety and legal reasons, using all available methods (biological controls, hand-controls, mechanical, and pesticides).

4K6-008 Prohibit broadcast application of chemical pesticides. Broadcast application of pheromone flakes and *Bacillus thuringiensis var. kurstaki* (Btk) is allowed.

4K6-009 Eradicate non-native invasive plants when the infestations are isolated. Use approved hand-applied chemicals, when necessary.

4K6-010 Salvage harvesting operations are allowed to reduce fuels and the risks and hazards of damage from insects and diseases, using existing roads only with minimum necessary skid roads and landings.

Timber Management

4K6-011 These lands are unsuitable for timber production. Commercial timber harvesting is only allowed when associated with salvage (for the reasons listed above) and the exercise of valid existing mineral rights and leases such as timber associated with roads, gas well pads and pipelines.

Non-timber Forest Products

4K6-012 There will be no personal or commercial authorizations issued for harvesting or collecting non-timber forest products such as ginseng, golden seal, witch-hazel bark, firewood, etc.

Prescribed Fire and Wildland Fire Use

4K6-013 Vegetation management may be accomplished with management ignited prescribed fire, wildland fire use or mechanical fuel treatments as an appropriate method of reducing costs associated with these activities.

4K6-014 Use natural and existing man-made fuel breaks such as streams, rock slides, roads, trails, etc. where possible to minimize fireline construction.

4K6 NORTH FORK OF POUND SPECIAL AREA

Recreation

4K6-015 Subject to valid existing rights and following expiration of the existing Federal lease, this special area is primarily managed for the semi-primitive non-motorized and motorized ROS classes, although some of the area is roaded natural. See ROS Map.

4K6-016 Construction of new non-motorized trails and development of watchable wildlife observation sites are allowed. Establishment of interpretive sites are allowed to recognize, describe, and maintain the North Fork of Pound mountain community heritage before the area was flooded for the lake.

4K6-017 Recreation facilities and trails identified as potential sources of drinking water contamination are reconstructed, relocated, or decommissioned.

4K6-018 These areas are unsuitable for designation of new OHV routes or ATV use areas. Motorized administrative use is permitted.

Scenery

4K6-019 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

4K6-020 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive non-motorized areas within this prescription area, subject to valid rights and leases.

Range

4K6-021 Livestock grazing is not permitted.

Minerals

4K6-022 The North Fork of Pound is currently under lease, held by production. After expiration of this lease, the area will be available for federal oil and gas leasing with a no surface occupancy stipulation. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on semi-primitive recreation opportunities and values.

4K6-023 There are approximately 946 acres of private mineral rights within the North Fork of Pound Special Area. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding mineral right are recognized and reasonable access is granted.

Roads

4K6-024 Do not permit road construction, subject to valid existing rights and leases.

4K6-025 New roads needed for access to mineral leases or rights are engineered to prevent contamination of drinking water sources and managed as closed to public motorized travel.

4K6-026 Existing roads are closed to all but occasional administrative use which may include the following: 1) maintenance and inspection of gas well pads, roads, and pipelines; 2) maintenance of existing and creation of new wildlife

openings; 3) access required for implementation of prescribed burning; and 4) access required for wildland fire suppression.

4K6-027 Decommission any roads not needed for administrative access.

Lands and Special Uses

4K6-028 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites.

4K6-029 Existing special use authorizations are allowed to continue. Other new special use authorizations are authorized if consistent and compatible with the backcountry and source water protection goals of this area.

5A ADMINISTRATIVE SITES

This management prescription is allocated to approximately 200 acres (< 1%) across the Jefferson National Forest.

EMPHASIS:

Sites include work centers, lookout towers, and Forest Service owned houses and offices . Sites are managed to serve/support resource programs and are maintained to protect capital investment.

DESIRED CONDITION:

Provide administrative sites and facilities that effectively and safely serve the public and accommodate the workforce. Administrative sites are readily accessed by road, although some are accessed by trails. The facilities should have barrier-free access.

The landscape character could range from natural appearing to urban/cultural. These areas are classified as unsuited for timber production.

Forest Service offices and/or visitor centers provide educational and/or interpretive opportunities such as exhibits and displays, books, videos and brochures. Where feasible and appropriate, short hiking trails are provided in association with office visitor centers. Lookout towers provide opportunities for viewing scenery on a grand scale. Hunting and fishing are generally not allowed at administrative sites.

Some of these administrative sites lie within the foreground of the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

STANDARDS

Vegetation and Forest Health

5A-001 Aggressively control forest insects, diseases, and non-native invasive plants using the most effective control method.

Appalachian National Scenic Trail

5A-002 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

5A-003 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

Minerals

5A-004 This area is not available for commercial or personal use of mineral materials. Administrative and free use of mineral materials is allowed.

5B DESIGNATED COMMUNICATION SITES

This management prescription is allocated to approximately 72 acres (< 1%) across the Jefferson National Forest and includes the communications sites shown in Table 3-2.

EMPHASIS:

These designated sites contain special uses which serve a public benefit by providing a reliable communication network essential to local, regional, and national economies and security. These sites include ridgetop towers and other related facilities. These designated sites are managed to minimize adverse impacts on other resources.

DESIRED CONDITION:

Existing special use authorizations for communications continue within these designated sites. Each site is developed and utilized to its greatest potential in order to reduce the need to develop additional sites. Where possible, existing sites are expanded as needed

Table 3-2. Designated Communications Sites

Communication Site	District	Acres
Eagle Knob	Clinch	34
High Knob	Clinch	1
Mayking Peak	Clinch	2
Apple Orchard	Glenwood	2
Quebec Knob	Mount Rogers NRA	5
Whitetop	Mount Rogers NRA	10
Potts Mountain	New Castle	5
Brush Mountain	New River Valley	1
Butt Mountain	New River Valley	1
Flat Top	New River Valley	10
Walker Mountain	New River Valley	1

rather than creating additional areas. All users' equipment are compatible with forest surroundings and others users' equipment and frequencies. New equipment should be as inconspicuous to the surrounding terrain as possible. Special use authorizations are issued.

Vegetation consists predominantly of low grasses and wildflowers with some native deciduous and evergreen shrubs. For the most part the areas are on gently rolling terrain, some with exposed surface rock, rock outcrops, and meandering streams.

The protection of rare communities and species associates is provided, along with protection measures for population occurrences for threatened, endangered, sensitive, and locally rare species. This will provide a high likelihood that species within these associations will continue to persist on National Forest System lands.

The landscape character is cultural/urban. Scenery management techniques are used to mitigate adverse impacts. Utilizing existing and proposed towers to accommodate as many users as possible (within technical constraints) reduces tower clutter. These sites are non-forested, benefiting wildlife species, which favor grass, shrubs, old fields, and forest edges. These areas are managed to retain low growing vegetation which conforms to the safe operating requirements of the communication use and which reduce surface water runoff and erosion. Recreation is not emphasized or encouraged at these sites, although some of these sites are located within the foreground of the Appalachian National Scenic Trail.

STANDARDS

General

5B-001 Communications towers no longer in use or determined to be obsolete are removed by the holder of the special use authorization within 18 months of cessation of use.

Threatened, Endangered, And Sensitive Species

5B-002 Within the Peaks of Otter salamander habitat conservation area, activities must comply with the Habitat Conservation Agreement for Peaks of Otter salamander. See Management Prescription 8E2 for Peaks of Otter salamander habitat conservation area management direction.

Vegetation and Forest Health

5B-003 Aggressively control non-native, invasive plant species within these areas.

Appalachian National Scenic Trail

5B-004 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

5B-005 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	M	M	L	L	L	L	L

5C DESIGNATED UTILITY CORRIDORS

This management prescription is allocated to approximately 3,700 acres (1%) across the Jefferson National Forest.

EMPHASIS:

These designated corridors contain special uses which serve a public benefit by providing a reliable supply of electricity, natural gas, or water essential to local, regional, and national economies. They include long linear features like high voltage electric transmission lines and buried pipelines for public drinking water or natural gas. These designated corridors serve uses that require at least a 50 feet wide right-of-way. Local distribution lines are not included in this prescription area, but rather are part of the prescription area in which they are physically located.

DESIRED CONDITION:

Existing linear special use authorizations for transmission lines and pipelines for water and natural gas will continue within these designated corridors. Rights-of-way for uses within designated utility corridors are authorized by special use permit or easement. Where possible, existing corridors are expanded as needed rather than creating additional areas. Compatible multiple uses are encouraged, including co-location of communication uses on existing electric transmission towers.

Vegetation consists predominantly of low grasses, wildflowers with some native deciduous and evergreen shrubs, low-growing trees like dogwood and redbud, and young, sapling-sized trees.

The protection of rare communities and species associates is provided, along with the protection measures for population occurrences for threatened, endangered, sensitive, and locally rare species. This will provide a high likelihood that species within these associations will continue to persist on National Forest System lands.

Utility corridors are prime areas for viewing wildlife species that favor grass, shrubs, old fields, and forest edges. These areas are managed to retain low growing vegetation which conforms to the safe operating requirements of the utility and which reduce surface water runoff and erosion. Recreation use is generally hunting-related, although existing trail systems often cross these corridors. Some of these corridors are located within the foreground of the Appalachian National Scenic Trail. The landscape character could range from natural appearing to pastoral/cultural. Scenery management techniques are used to mitigate adverse impacts. These lands are predominately non-forest and therefore classified as unsuitable for timber production.

STANDARDS

Vegetation and Forest Health

5C-001 Aggressively control non-native, invasive plant species within these corridors.

Appalachian National Scenic Trail

5C-002 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

5C-003 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	M	M	L	L	L	L	L

6 OLD-GROWTH FOREST COMMUNITIES

The following old growth community prescriptions, 6A, 6B, and 6C contain both existing and future old growth. Forest communities are assigned to one of these prescriptions based upon the normal disturbance regime for a given community type. For example, mixed mesophytic communities are low disturbance systems that commonly regenerate through natural development of relatively small canopy gaps, and occasional larger openings as a result of beavers, flood events, wind, or ice storms. Frequent fire in these systems was not typical historically and is not desirable presently. These forest communities are allocated to management prescription 6A.

Conversely, the xeric pine and pine-oak forest communities are well adapted to frequent fire return interval and long-term fire suppression is causing dramatic changes in both species composition and stand structure in these communities. These forest communities are allocated to management prescription 6B.

Management prescription 6C is allocated to those forest communities that are associated with a less frequent fire return interval. The dry-mesic oak forests and dry and dry-mesic oak-pine forest communities are also experiencing species composition and stand structure changes as a result of fire suppression, however, not nearly so dramatically as the southern yellow pine types.

All three management prescriptions (6A, 6B, and 6C) are unsuitable for timber production. Active management in 6B, and to a lesser extent 6C communities, is necessary to maintain both species composition and stand structure. This active management is almost entirely prescribed fire and wildland fire use, however, occasionally tree cutting or other vegetation management strategies may be necessary in the event of insect or disease outbreaks, non-native invasive pests, or where fire cannot be reintroduced due to external values at risk. Without this external management intervention individual species, like Table Mountain pine, could disappear from these communities resulting in unintended and unknown ecological consequences in the long-run.

6A OLD-GROWTH FOREST COMMUNITIES NOT ASSOCIATED WITH DISTURBANCE

This management prescription is allocated to approximately 300 acres (< 1%) across the Jefferson National Forest.

EMPHASIS:

This prescription is part of an overall network of large (2,500+ acres), medium (100 to 2,499 acres), and small old growth patches not dependent upon or associated with a disturbance regime. Management of these areas emphasizes protection, restoration, and

6A OLD GROWTH FOREST COMMUNITIES NOT ASSOCIATED WITH DISTURBANCE

management of old growth forests and their associated wildlife, botanical, recreational, scientific, educational, cultural, and spiritual values. Within this prescription, no forest management activities or intervention will take place. The exception is for forest health considerations when threatened, endangered, sensitive, and locally rare species habitats may be threatened.

DESIRED CONDITION:

These areas contain a representation of forest community types perpetuated by natural processes. The old growth forest community types in these areas include: Eastern riverfront, river floodplain, montane spruce-fir, Northern hardwoods, conifer-Northern hardwoods, and mixed mesophytic. The natural evolving landscape character features a structurally diverse older aged forest community with a continuous forested canopy, with the exception of occasional gaps created by storms, insects, diseases, or fire. The valued character of these landscapes appears intact with no deviations.

Natural processes will maintain or restore a large, medium, or small patch old growth forest matrix. Rare communities and associated species not dependent upon disturbance will continue to exist in the area. Disturbance dependent communities are typically not well represented within these forest communities, confined to small brushy and herbaceous gaps and occasional large openings from natural disturbance events. Insects and diseases, primarily gypsy moth, hemlock woolly adelgid, oak decline, and southern pine beetle, play a major role in shaping future species composition and successional stages across these areas. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

To date, no species or species group has been identified as being dependent upon old growth forest communities on the Jefferson National Forest; however, much is still unknown about many species. However, old growth forest communities may serve as suitable habitat for some species associates. For example, the hooded warbler and sharp-shinned hawk are associated with mature mesic hardwood forest communities, so this management prescription will provide suitable to optimum habitat for these species. This “coarse filter” approach of providing a representation of the different old growth forest communities helps to address overall biological diversity goals and provides a “biological safety net.”

Commercial timber harvest and prescribed fire are not appropriate within these forest communities. Wildland fires are used to maintain the natural fire regime. Non-commercial felling of trees should be limited to that necessary to protect public health and safety.

The landscape character is natural evolving. These areas will provide a variety of dispersed, non-motorized recreation opportunities. Visitors will see little evidence of humans or human activities. A non-motorized trail system will provide the predominant means of access. Closed roads are available for non-motorized uses. Outdoor skills are important for visitors in the more remote portions of these areas. Hiking, nature study, backpacking, hunting, and fishing are typical activities available.

Some of these old growth communities lie within the foreground the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

STANDARDS

General

6A-001 The following forest types are allocated to this management prescription when new discoveries of old growth communities that meet the criteria stated in the Forestwide direction are made: 04-08, 17, 41, 58, 63, 69, 72-75, or 81-82 (See Appendix D for information about these forest type codes).

Water, Soil, and Air

6A-002 Maintain soils in a natural, undisturbed state, except for approved watershed restoration projects, wildland fire control measures, and trail construction, use, and maintenance.

Terrestrial and Aquatic Species

6A-003 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are not maintained, and succeed to forest, deteriorate over time, or are removed. New permanent wildlife openings are not created.

Rare Communities and Old Growth

6A-004 Rare communities are only maintained through natural processes, with the exception of appropriate management associated with threatened, endangered, sensitive, and locally rare species habitats.

Vegetation and Forest Health

6A-005 Native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, and sensitive species. Non-native, invasive insects and diseases may be eradicated or suppressed to prevent a loss of the old growth community. Favor biological control methods.

6A-006 Suppression, eradication, and Slow the Spread actions to control **gypsy moth** are allowed.

6A-007 Eradicate non-native invasive plants when the infestations are isolated. Use hand-applied chemicals, with Forest Supervisor approval, when necessary.

Timber Management

6A-008 These lands are unsuitable for timber production. Timber harvest is not allowed unless associated with reasonable access to valid existing rights.

Non-timber Forest Products

6A-009 Do not issue authorizations for the commercial use of any forest products.

6A-010 Do not permit personal-use collection of dead and down wood or other non-timber forest products.

Wildland Fire Suppression

6A-011 Use suppression methods that cause the least alteration of the old growth community and least disturbance of the land surface.

6A-012 Avoid use of heavy equipment unless there is an imminent threat to life or property that cannot be controlled by other means. Evidence of such use willpa be obliterated as soon as possible.

Prescribed Fire and Wildland Fire Use

6A-013 Management-ignited prescribed fire is not planned within these areas, but there is no reason to exclude these areas when prescribed fire is planned in adjacent areas.

Recreation

6A-014 Decommission facilities that are not compatible with the old growth community.

6A-015 Construct and maintain trails to the minimum standard necessary for protection of the old growth community, soil, water, user safety, and long-term maintenance. Emphasize trails that appear to be part of the environment.

6A-016 When these areas are accessible to the public, provide informational and educational materials explaining old growth functions and values and how people can help protect these areas from overuse.

6A-017 Do not designate any OHV roads or trails within these areas.

Appalachian National Scenic Trail

6A-018 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

6A-019 Management activities are designed to meet the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	VH	VH	VH	VH	VH	VH	VH

Range

6A-020 Livestock grazing is not permitted.

Minerals

6A-021 These areas are available for federal oil and gas leasing with a no surface occupancy stipulation. Other Federal minerals are not available.

6A-022 This area is not available for commercial, personal, or free use mineral materials. Administrative use of mineral materials is allowed when a) the materials are used within the old growth community itself; and b) use is necessary to protect old growth resources and values.

6A-023 Federal oil and gas leases exist in some of these areas on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these leases are allowed. Existing lease stipulations are used to minimize disturbance to the old growth community.

6A-024 Some of these areas are underlain by private mineral rights. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to the old growth community.

Roads

6A-025 Do not permit road construction, subject to valid existing rights and leases. Road reconstruction and minor relocation are permitted after full consideration of effects on old growth resources and values.

6A-026 Decommission unneeded roads.

Lands and Special Uses

6A-027 These areas are unsuitable for new special uses, except for research and outfitter-guide operations. Phase out existing non-conforming uses.

6A-028 Allow commercial use by outfitters and guides if compatible with the maintenance of old growth communities. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

6B OLD-GROWTH FOREST COMMUNITIES DEPENDENT ON FIRE

This management prescription is allocated to approximately 800 acres (< 1%) across the Jefferson National Forest.

EMPHASIS:

This prescription is part of an overall network of large (2,500+ acres), medium (100 to 2,499 acres), and small old growth patches dependent upon a disturbance regime. Management of these areas emphasizes protection, restoration, and management of old growth forests and their associated wildlife, botanical, recreational, scientific, educational, cultural, and spiritual values. Within this prescription, forest management activities are allowed in order to restore or maintain old-growth conditions.

DESIRED CONDITION:

The area contains a representation of the forest community types dependent on fire for successful regeneration. The forest community types in these areas include the southern yellow pine types. Other old-growth forest community types are present, but make up a smaller proportion of the landscape within this allocation. The forest communities within these areas typically contain large diameter, "flattop" southern pine trees, with some of the xeric hardwood communities containing smaller trees in both diameter and height. Dead, dying, and down trees are common. The forest canopies typically are continuous, interspersed with small gaps from natural causes. The communities also have open forest canopies and understories due to the presence of frequent fires.

The reintroduction of pulsed; high and low, intensity fire is the key to the restoration and maintenance of table mountain and pitch pine forests in the southern Appalachian mountains (Chuck Williams, 1998). In addition, use of commercial and non-commercial timber management may occur to regenerate southern yellow pine stands when loss of seed viability from insect or disease outbreaks is imminent. Scarification of the soil, and creation of conditions for yellow pine regeneration can be accomplished with prescribed fire and/or conventional ground-based logging activities.

To date, no species or species group has been identified as being dependent upon old growth forest communities on the Jefferson National Forest; however, much is still unknown about many species. However, old growth forest communities may serve as suitable habitat for some species associates. For example, the pine warbler and northern pine snake are associated with mature pine forest communities, so this management prescription will provide suitable to optimum habitat for these species. This “coarse filter” approach of providing a representation of the different old growth forest communities

6B OLD GROWTH FOREST COMMUNITIES DEPENDENT ON FIRE

helps to address overall biological diversity goals and provides a "biological safety net."

The landscape character is natural appearing. These areas will provide a variety of recreation opportunities. Human activities may be evident in some places. Visitors will occasionally see other people especially near the few open roads in these areas. A non-motorized trail system will provide the predominant means of access. Closed roads are available for non-motorized uses. Outdoor skills are important for visitors in the more remote portions of these areas. Hiking, nature study, backpacking, hunting, and fishing are typical activities available.

Some of these old growth communities lie within the foreground the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

OBJECTIVES

6B-OBJ1 Plan prescribed fires at 7-12 year intervals.

STANDARDS

General

6B-001 The following forest types are allocated to this management prescription when new discoveries of old growth communities that meet the criteria stated in the Forestwide direction are made: 15, 16, 20, 33, 38 or 39 (See Appendix D).

Terrestrial and Aquatic Species

6B-002 Wildlife habitat is maintained through prescribed fire. Current openings are maintained through prescribed fire. New openings are not purposefully created, but will occur through fire. Do not develop new water holes.

6B-003 Up to 4 percent of this prescription area may be in early successional habitat conditions as a result of natural disturbances, prescribed fire, and timber harvest specifically designed to restore the old growth forest community.

Vegetation and Forest Health

6B-004 With the exception of southern pine beetle, native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, and sensitive species. Non-native, invasive insects and diseases may be eradicated or suppressed to prevent a loss of the old growth community. Favor biological control methods.

6B-005 Generally, **Southern pine beetle** should be considered a natural part of these ecosystems. However, in epidemic situations, Southern pine beetle may be controlled, on a case-by-case basis, if necessary to maintain the southern yellow pine community.

6B-006 Limit **gypsy moth** control actions outside of the Animal and Plant Health Inspection Service (APHIS) quarantine area to Slow the Spread and eradication of isolated outbreaks in these communities.

6B-007 Herbicides may be used to manipulate species composition, open up the

understory, and eradicate or suppress non-native invasive plants.

6B-008 Allow vegetation management activities to:

- Maintain or restore native southern yellow pine communities;
- Restore, enhance, or mimic historic fire regimes;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Suppressor control insect and disease outbreaks;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

Timber Management

6B-009 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

6B-010 Use only even-aged silvicultural systems, predominately clearcutting and seed tree cutting.

6B-011 Leave the largest and oldest yellow pine trees as a seed source, otherwise cut and remove all competing hardwoods and softwoods if merchantable.

6B-012 Regeneration units range from 5-40 acres in size.

6B-013 Salvage of dead and dying trees is allowed to prepare a seedbed or to control pest problems.

Prescribed Fire and Wildland Fire Use

6B-014 Prescribed fire is emphasized to restore and maintain old-growth conditions. Fire is applied at varying intensities to achieve resource objectives.

6B-015 Prescribed fires are designed to remove the oak leaf litter and duff layer, which inhibit pine development.

Recreation

6B-016 Any new trail construction or reconstruction must be carefully located to avoid adverse impacts to old growth characteristics and rare plants. Emphasize trails that appear to be part of the environment.

6B-017 When these areas are accessible to the public, provide informational and educational materials explaining old growth functions and values and how people can help protect these areas from overuse.

6B-018 Do not designate any OHV roads or trails within these areas.

Appalachian National Scenic Trail

6B-019 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

6B-020 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	L	L

Range

6B-021 Livestock grazing is not permitted.

Minerals

6B-022 These areas are available for federal oil and gas leasing with controlled surface use to protect old growth resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the old growth community.

6B-023 Federal oil and gas leases exist in some of these areas on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these leases are allowed. Existing lease stipulations are used to minimize disturbance to the old growth community.

6B-024 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed: to protect old growth resources and values; to restore riparian areas and aquatic habitat; to control erosion and sedimentation; and to repair flood damage.

6B-025 Private mineral rights underlie some of these areas on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to the old growth community.

Roads

6B-026 Maintain a transportation system adequate for frequent prescribed fire activities.

6B-027 Road construction and reconstruction are allowed to manage resources within these areas. Design roads to minimize impact to the old growth community.

6B-028 Do not increase current open system road density levels calculated across each prescription block.

Lands and Special Uses

6B-029 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Existing uses are allowed to continue.

6B-030 Authorize other special uses, like outfitter/guide operations, if consistent and compatible with the goals and objectives of these areas.

6C OLD-GROWTH FOREST COMMUNITIES ASSOCIATED WITH DISTURBANCE

This management prescription is allocated to approximately 30,200 acres (4%) across the Jefferson National Forest.

EMPHASIS:

This prescription is part of an overall network of large (2,500+ acres), medium (100 to 2,499 acres), and small old growth patches associated with a disturbance regime. Management of these areas emphasizes protection, restoration, and management of old growth forests and their associated wildlife, botanical, recreational, scientific, educational, cultural, and spiritual values. Within this prescription, most of the area will contain forest communities where no forest management activities or intervention will take place. On a smaller portion of the area, forest management activities are allowed in order to restore or maintain old-growth conditions.

DESIRED CONDITION:

The area mostly contains a representation of the forest community types associated with a disturbance regime. Most of the old growth forest community types can occur in these areas and include dry-mesic oak forest, dry and xeric oak forest, dry and dry-mesic oak-pine forest. Dead, dying, and down trees are common. Most of the area will contain forest canopies that are continuous, interspersed with small gaps from natural causes, with little evidence of past human activity. A small number of areas will have open forest canopies and understories due to the present of frequent fires, while other areas will have evidence of some forest management activities. These lands are classified as unsuitable for timber production.

Wildland fire use, prescribed fire, and integrated pest management are appropriate management tools to: maintain and restore the represented old growth forest community type; improve threatened, endangered, sensitive, and locally rare species habitat; restore, enhance, or mimic historic fire regimes; or control non-native invasive vegetation and pests.

Some of these communities are located in situations where topography, external values at risk, or other factors eliminate the possibility of prescribed fire or wildland fire use. In these situations, low intensity timber harvest may be used to mimic historic fire regimes. Without intervention, these areas will gradually shift through natural succession to more shade-tolerant and less fire-resistant forest communities. These successional processes are monitored and if maintenance of these communities are desirable for the future, they need to be moved to a different management prescription.

To date, no species or species group has been identified as being dependent upon old growth forest communities on the Jefferson National Forest; however, much is still unknown about many species. However, old growth forest communities may serve as suitable habitat for some species associates. For example, the hooded warbler and orchard oriole are associated with mature oak forest communities, so this management prescription will provide suitable to optimum habitat for these species. This “coarse filter” approach of providing a representation of the different old growth forest communities helps to address overall biological diversity goals and provides a “biological safety net.”

The landscape character is natural appearing. These areas will provide a variety of recreation opportunities. Human activities may be evident in some places. Visitors will occasionally see other people especially near the few open roads in these areas. A non-motorized trail system will provide the predominant means of access. Closed roads are

6C OLD GROWTH FOREST COMMUNITIES ASSOCIATED WITH DISTURBANCE

available for non-motorized uses. Outdoor skills are important for visitors in the more remote portions of these areas. Hiking, nature study, backpacking, hunting, and fishing are typical activities available.

Some of these old growth communities lie within the foreground the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

OBJECTIVES

6C-OBJ1 Plan prescribed fires at 10-15 year intervals, more frequently as necessary to reduce unusually high fuel buildups.

6C-OBJ2 Maintain an open road density at or below .8 miles per square mile.

STANDARDS

General

6C-001 All forest types not previously mentioned under 6A and 6B are allocated to this management prescription when new discoveries of old growth communities that meet the criteria stated in the Forestwide direction (See Appendix D).

Terrestrial and Aquatic Species

6C-002 Wildlife habitat is maintained through prescribed fire. Current openings are maintained through prescribed fire. New openings are not purposefully created, but will occur through fire. Do not develop new water holes.

6C-003 Up to 4 percent of this prescription area may be in early successional habitat conditions as a result of natural disturbances, prescribed fire, and timber harvest specifically designed to restore the old growth forest community.

Vegetation and Forest Health

6C-004 Native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, and sensitive species. Non-native, invasive insects and diseases may be eradicated or suppressed to prevent a loss of the old growth community. Favor biological control methods.

6C-005 Suppression, eradication, and Slow the Spread actions to control **gypsy moth** infestations are allowed.

6C-006 Herbicides may be used to manipulate species composition, open up the understory, and eradicate or suppress non-native invasive plants.

6C-007 Allow vegetation management activities to:

- Maintain and restore dry-mesic oak forest, dry and xeric oak forest, dry and dry-mesic oak-pine old growth forest communities;
- Restore, enhance, or mimic historic fire regimes;
- Reduce fuel buildups;
- Maintain rare communities and species dependent on disturbance;

- Provide for public health and safety;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Control non-native invasive vegetation

6C-008 Felling and leaving of individual trees is allowed for public safety and trail maintenance within appropriate trail clearing limits.

Timber Management

6C-009 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

6C-010 Salvage of dead and dying trees is only allowed when necessary to prepare a seedbed or to control pest problems.

Prescribed Fire and Wildland Fire Use

6C-011 Prescribed fire is emphasized to restore and maintain old-growth conditions. Fire is applied at varying intensities to achieve resource objectives.

6C-012 Prescribed fires are designed to remove the oak leaf litter and duff layer, which inhibit pine development.

Recreation

6C-013 Any new trail construction or reconstruction must be carefully located to avoid adverse impacts to old growth characteristics and rare plants. Emphasize trails that appear to be part of the environment.

6C-014 When these areas are accessible to the public, provide informational and educational materials explaining old growth functions and values and how people can help protect these areas from overuse.

6C-015 Do not construct any OHV roads or trails within these areas.

Appalachian National Scenic Trail

6C-016 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

6C-017 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	L	L

6C-018 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive non-motorized areas within this prescription area, subject to valid rights and leases.

Range

6C-019 Livestock grazing is not permitted.

6C OLD GROWTH FOREST COMMUNITIES ASSOCIATED WITH DISTURBANCE

Minerals

6C-020 These areas are available for federal oil and gas leasing with controlled surface use to protect old growth resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the old growth community.

6C-021 Federal oil and gas leases exist in some of these areas on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these leases are allowed. Existing lease stipulations are used to minimize disturbance to the old growth community.

6C-022 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed: to protect old growth resources and values; to restore riparian areas and aquatic habitat; to control erosion and sedimentation; and to repair flood damage.

6C-023 Private mineral rights underlie some of these areas on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to the old growth community.

Roads

6C-024 New roads may be constructed through these areas only when they are situated on the landscape in such a way that going around them is not an option. Design roads to minimize impact to the old growth community.

6C-025 Unneeded roads may be decommissioned; however, it is important to maintain a transportation system adequate for frequent prescribed fire activities.

Lands and Special Uses

6C-026 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Existing uses are allowed to continue.

6C-027 Authorize other special uses, like outfitter/guide operations, if consistent and compatible with the goals and objectives of these areas.

7A SCENIC BYWAY CORRIDORS

7A SCENIC BYWAY CORRIDORS

This management prescription is allocated to approximately 1,800 acres (< 1%) across the Jefferson National Forest.

EMPHASIS:

Scenic byway corridors are managed to provide visitors with enjoyment of outstanding scenery of natural and cultural landscapes along a well-maintained road. The area may also contain recreational and interpretive trails. The area visible during leaf-off for up to 1/2 mile from either side of the road defines the byway corridor, unless other criteria are established in the specific scenic byway management plan. Management is focused on protecting and showcasing the unique and scenic natural and cultural resources, which were the basis for the scenic byway designation.

DESIRED CONDITION:

The area provides exceptional opportunities for motorized recreation, especially scenic driving. The views along the byway are natural appearing and include a variety of landscape characters, ranging from natural appearing to pastoral and historic/cultural, providing colorful accents and interesting textures, which change with the season. Visitors enjoy viewing wildlife in the occasional openings and meadows scattered throughout the forest. Water, geographic features, and cultural landscapes such as hay fields, grazing livestock, and the occasional rustic cabin provide scenic diversions to the predominately forested landscape. Road corridor improvements and interpretive facilities are evident changes to the natural environment, but these man-made alterations fit well with the character of the surrounding landscape. Other management activities are not evident to the average visitor.

The prescription area is easily accessed. Maintaining a good road surface and providing informational signs for protection of the natural and cultural resources as well as the safety and comfort of visitors minimize impacts of visitors within the prescription area.

The potential for encounters with other Forest visitors is moderate to high, especially at byway facilities, which include pullouts, overlooks, interpretive kiosks, trails, restrooms, and picnic sites. Scenic, historic and/or natural resources are interpreted for the benefit of visitors. These recreation and interpretive facilities are designed and constructed to blend well and complement the natural or cultural environment surrounding the byway. There are limited opportunities for remoteness, although visiting the byway in the winter (if it is not seasonally closed) or mid-week improves opportunities for seeking solitude. There is low risk and little need for visitors to rely on personal physical abilities or primitive outdoor recreation skills. Most, if not all, facilities are designed to accommodate persons with disabilities.

Vegetation is influenced both by natural processes and humans. Biological communities are maintained or improved to provide an attractive setting for visitors, while providing for the protection of rare communities and threatened, endangered, sensitive, and locally rare species. Forest management activities maintain the natural characteristics that make the area scenic. Low intensity commercial timber harvest is appropriate to maintain the long-term goals of a diverse and vigorous forest with sensitivity to dispersed recreation and scenic values. Timber harvesting operations focus on what is retained in the stand, not on wood fiber production. Timber harvest practices are visually subordinate to the surrounding landscape. In the foreground of these areas, management activities are rarely evident to the casual observer.

These areas are characterized by a predominance of mid- and late-successional forests with a high to intermediate tolerance to shade. Forest structure varies according to ecological factors, but largely consists of a mature overstory of hardwoods, occasionally mixed with pines, a fairly open midstory, and a well-developed herbaceous and shrubby understory. Understory vegetation includes a variety of native deciduous and evergreen flowering trees, shrubs and wildflowers. Even- and uneven-aged forest communities are managed throughout the area, along with continued development of medium and small patches of late successional to old growth forest communities. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the scenic objectives of the byway corridor; however, no early successional habitat objectives are associated with this prescription. Wildlife viewing opportunities are maintained and expanded through livestock grazing, cultivation, mowing, and burning of openings and pastoral areas.

STANDARDS

Terrestrial and Aquatic Species

7A-001 Wildlife and fisheries habitat improvements are allowed to enhance wildlife viewing, hunting, and fishing opportunities in accordance with scenic integrity objectives. Watchable wildlife species habitat improvements are encouraged.

7A-002 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

7A-003 Old growth patches of all sizes and community types are maintained and restored.

7A-004 Interpretation of rare communities is encouraged when carefully controlled to promote understanding and stewardship.

Vegetation and Forest Health

7A-005 Forest structure is managed to favor flowering trees and shrubs.

7A-006 Control insect and disease outbreaks, when necessary, to protect the scenic values, to reduce hazards to visitors, or for safety or legal reasons. Eradicate recently established non-native pests when possible. Favor the most effective control method.

7A-007 Salvage is allowed for scenic rehabilitation, fuel reduction, and to capture the economic value of dead, dying and diseased trees.

7A-008 Allow vegetation management activities to:

- Enhance or rehabilitate scenery, including:
  - Create aesthetically desired stand structure and species composition including a pleasing mosaic of tree species of various densities and stem sizes, park-like effects, and enhancement of fall color species;
  - Feature flowering trees, character trees, and shrub species;
  - Maintain open areas, old field habitats, pastoral settings, and vistas that enhance the scenic qualities of the corridor;
- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Minimize impacts from insect or disease outbreaks and rehabilitate damaged areas;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

Timber Management

7A-009 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

7A-010 Clearcutting may only be used to open up vistas, create spatial diversity along travelways, decrease straight line effect of cleared utility corridors, create watchable wildlife openings, for insect and disease suppression, or for scenic rehabilitation.

Prescribed Fire and Wildland Fire Use

7A-011 Vegetation management may be accomplished with management-ignited prescribed fire, wildland fire use, and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

7A-012 Interpretive services such as trails, signs, viewing areas, self-guided programs, and buildings are provided to enhance the understanding of, and appreciation for the natural environment, cultural resources, and the byway's special features.

7A-013 Larger scale public use facilities, such as public information centers and administrative headquarters are allowed with structures properly landscaped.

7A-014 OHV routes that quickly leave the seen area and trailheads may be designated.

Scenery

7A-015 Short-term scenic integrity objectives of rehabilitation and enhancement may be used until scenic integrity objectives are achieved.

7A-016 These areas are managed to meet a scenic integrity objective of high.

7A-017 Manage to maintain and enhance the Rural Americana theme for the Mount Rogers NRA.

Minerals

7A-018 These corridors are available for federal oil and gas leasing with controlled surface use to protect the scenic resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on scenic resources and values.

7A-019 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the scenic resources and values.

7A-020 Permit new borrow pits, provided they meet the scenic integrity objective. Rehabilitate or reclaim existing borrow pits that are currently not meeting the scenic integrity objective.

Roads

7A-021 Permit new access roads, provided they quickly enter and leave the seen area and do not parallel existing travelways.

7A-022 All roads, facilities, and signing are designed to blend in with surroundings.

Lands and Special Uses

7A-023 These areas are unsuitable for designation of new utility corridors, utility

rights-of-way, or communication sites. Continue existing uses. Require necessary mitigation techniques, including screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of new or upgraded, utility corridors or communication sites.

7A-024 Allow agricultural special-use authorizations to maintain open and pastoral spaces.

7A-025 Authorize other special uses if consistent and compatible with the goals and objectives of this area.

7B SCENIC CORRIDORS

This management prescription is allocated to approximately 23,500 acres (3%) across the Jefferson National Forest.

EMPHASIS:

The emphasis is on providing, through maintenance or restoration and design, high quality scenery in sensitive recreational and travelway settings. Examples include areas adjacent to "gateway" communities, areas around lakes, rivers, and "backdrop" areas viewed from State-designated byways and major travelways.

DESIRED CONDITION:

These areas are characterized by high quality scenery in a setting conducive to a variety of recreational experiences. Human modifications are subordinate to the characteristic landscape. Landscape restoration and rehabilitation to meet high quality scenic conditions are a high priority. Coordination with nearby communities will help provide complementary management of adjoining lands.

The area provides exceptional opportunities for motorized recreation, especially scenic driving. The views along the corridors are natural appearing and include a variety of landscape characters, ranging from natural appearing to pastoral and historic/cultural, providing colorful accents and interesting textures, which change with the season. Visitors enjoy viewing wildlife in the occasional openings and meadows scattered throughout the forest. Water, geographic features, and cultural landscapes such as hay fields, grazing livestock, and the occasional rustic cabin provide scenic diversions to the predominately forested landscape. Road corridor improvements and interpretive facilities are evident changes to the natural environment, but these man-made alterations fit well with the character of the surrounding landscape. Other management activities are not evident to the average visitor.

The prescription area is easily accessed. Maintaining a good road surface and providing informational signs for protection of the natural and cultural resources as well as the safety and comfort of visitors minimize impacts of visitors within the prescription area.

Hiking, mountain biking, and horse trails are present throughout the prescription area. OHV trails may be present, but new trails are not constructed except where desired to link existing trail systems. In addition to enjoying the scenery and using various trails, visitors may engage in photography, wildlife viewing, hunting, and fishing. Facilities are designed to harmonize with the desired landscape setting. Facilities might include roads, pullouts, overlooks, parking areas, trailheads, bulletin boards, interpretive kiosks, rail fences, signs, restrooms, and picnic sites. Trails through this area are well-marked and may include features for visitors with special access needs, loop systems, and/or interpretive programs.

The sights and sounds of other visitors and motorized vehicles may be present. The opportunity to encounter other visitors is high along roadways, at parking areas, pullouts, and overlooks, but may be moderate to low on trails away from congregated use areas. At points of highly developed recreational use, visitors take on low risk and are not challenged to rely on their own physical abilities and outdoor skills. Once away from the more developed areas, opportunities for solitude are available. In these more remote areas, visitors may take on some risk and be challenged to rely on their own personal physical abilities and primitive recreational skills such as bouldering, climbing, stream fording, and orienteering.

Vegetation is influenced both by natural processes and humans. Biological communities are maintained or improved to provide an attractive setting for visitors, while providing for the protection of rare communities and threatened, endangered, sensitive, and locally rare species. Forest management activities maintain the natural characteristics that make the area scenic. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully to create visually diverse vegetation stages compatible with scenic values. Low intensity commercial timber harvest is appropriate to maintain the long-term goals of a diverse and vigorous forest with sensitivity to dispersed recreation and scenic values. Relatively longer rotation ages and a lower percentage of early successional forest in these areas reflect a “low intensity” approach to vegetation management and the higher priority of recreation and scenic values. Timber harvesting operations focus on what is retained in the stand, not on wood fiber production. Timber harvest practices are visually subordinate to the surrounding landscape. In the foreground of these areas, management activities are rarely evident to the casual observer.

These areas are characterized by a predominance of mid- and late-successional forests with a high to intermediate tolerance to shade. Forest structure varies according to ecological factors, but largely consists of a mature overstory of hardwoods, occasionally mixed with pines, a fairly open midstory, and a well-developed herbaceous and shrubby understory. Understory vegetation includes a variety of native deciduous and evergreen flowering trees, shrubs and wildflowers. Even- and uneven-aged forest communities are managed throughout the area, along with continued development of medium and small patches of late successional to old growth forest communities.

Wildlife species associated with mid- to late-successional deciduous forest habitats that are expected to inhabit this area include: hooded warbler, southern pigmy shrew; whip-poor-will; least weasel, downy woodpecker; eastern gray squirrel; and orchard oriole. This management prescription also provides suitable habitat for eastern wild turkey. Wildlife viewing opportunities are maintained and expanded through livestock grazing, cultivation, mowing, and burning of openings and pastoral areas.

STANDARDS

Terrestrial and Aquatic Species

7B-001 Wildlife and fisheries habitat improvements are allowed to enhance wildlife viewing, hunting, and fishing opportunities in accordance with scenic integrity objectives. Watchable wildlife species habitat improvements are encouraged.

7B-002 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

7B-003 Old growth patches of all sizes and community types are maintained and restored.

7B-004 Interpretation of rare communities is encouraged when carefully controlled to promote understanding and stewardship.

Vegetation and Forest Health

7B-005 Forest structure is managed to favor flowering trees and shrubs.

7B-006 Control insect and disease outbreaks, when necessary, to protect the scenic values, to reduce hazards to visitors, or for safety or legal reasons. Eradicate recently established non-native pests when possible. Favor the most effective control method.

7B-007 Allow vegetation management activities to:

- Enhance or rehabilitate scenery, including:
  - Create aesthetically desired stand structure and species composition including a pleasing mosaic of tree species of various densities and stem sizes, park-like effects, and enhancement of fall color species;
  - Feature flowering trees, character trees, and shrub species;
  - Maintain open areas, old field habitats, pastoral settings, and vistas that enhance the scenic qualities of the corridor;
- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Minimize impacts from insect or disease outbreaks and rehabilitate damaged areas;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

7B-008 Salvage is allowed for scenic rehabilitation, fuel reduction, and to capture the economic value of dead, dying and diseased trees.

Timber Management

7B-009 These areas are classified as suitable for timber production. Timber harvest practices are modified to recognize and enhance the aesthetic and recreational values of these lands.

7B-010 Group selection, individual tree selection, thinning, and shelterwood harvests are predominately used.

7B-011 Clearcutting may only be used to open up vistas, create spatial diversity along travelways, decrease straight line effect of cleared utility corridors, create watchable wildlife openings, for insect and disease suppression, or for scenic rehabilitation.

7B-012 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-180
Cove hardwoods	120-180
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Prescribed Fire and Wildland Fire Use

7B-013 Vegetation management may be accomplished with management-ignited prescribed fire, wildland fire use, and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

7B-014 Interpretive services including trails, signs, viewing areas, self-guided programs, and buildings are provided to enhance the understanding of, and appreciation for the natural environment, and cultural resources.

7B-015 Larger scale public use facilities, such as public information centers and administrative headquarters are allowed with structures properly landscaped.

7B-016 OHV trailheads and routes that quickly leave the seen area may be designated.

Scenery

7B-017 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

7B-018 Short-term scenic integrity objectives of rehabilitation and enhancement may be used until scenic integrity objectives are achieved.

7B-019 Manage to maintain and enhance the Rural Americana theme for the Mount Rogers NRA.

Minerals

7B-020 These corridors and viewsheds are available for federal oil and gas leasing with controlled surface use to protect the scenic resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on scenic resources and values.

7B-021 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the scenic resources and values.

7B-022 Permit new borrow pits, provided they meet the scenic integrity objective. Rehabilitate or reclaim existing borrow pits that are currently not meeting the scenic integrity objective.

Roads

7B-023 Permit new access roads, provided they quickly enter and leave the seen area and do not parallel existing travelways.

7B-024 All roads, facilities, and signing are designed to blend in with surroundings.

7B SCENIC CORRIDORS

7C OHV ROUTES AND ATV USE AREAS

Lands and Special Uses

7B-025 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Continue existing uses. Require necessary mitigation techniques, including screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of new or upgraded, utility corridors or communication sites.

7B-026 Allow agricultural special-use authorizations to maintain open and pastoral spaces.

7B-027 Authorize other special uses if consistent and compatible with the goals and objectives of this area.

7C OHV ROUTES AND ATV USE AREAS

This management prescription for Off-Highway Vehicle (OHV) routes and All-Terrain Vehicle (ATV) use areas is allocated to approximately 1,500 acres (< 1%) across the Jefferson National Forest. The only ATV use area currently designated on the Jefferson National Forest is the Patterson Mountain ATV area on the New Castle Ranger District. Demand exists for additional areas on the New River Valley and Clinch Ranger Districts, as well as the Mount Rogers NRA. ATV use areas are suitable for timber production. Other OHV routes (see Table 3-1) lie within larger prescription areas, which govern their surrounding vegetation management and desired conditions.

EMPHASIS:

Provide for motorized recreation opportunities in designated areas and along designated routes. These use areas and corridors contain routes designated specifically for licensed full size off road vehicle, ATV, and motorcycle users. Licensed full size off road vehicle routes are existing system roads designated for their challenging terrain and low impact to other resources. Licensed motorcycle routes include both designated system roads and trails. Designated ATV use areas are managed to mitigate soil, water, and wildlife impacts. Facilities such as trailheads are provided to enhance the quality of the recreational experience and provide access to designated routes.

Types of OHVs

All-Terrain Vehicles (ATVs): Unlicensed, three- or four-wheeled vehicles, 50 inches wide or less.

Motorcycles: Licensed or unlicensed.

Full size off road vehicles: Licensed, over 50 inches wide, like Jeeps, with high clearance for traveling over rough terrain.

See also the Glossary in Appendix B.

DESIRED CONDITION:

OHV routes and use areas are managed to provide a variety of motorized recreation opportunities on identified routes in natural appearing settings. Routes are maintained, improved, or expanded to meet local demands. Trail difficulty levels vary to accommodate a variety of desires and abilities. Users are adequately advised of trail difficulty levels and hazards. Support facilities, including trailheads, parking lots, restrooms, water access, and information boards, are well designed to meet the needs of the visitor. Use areas, route information, and regulations are provided to make the visitors' experience more enjoyable. These routes and areas are managed and monitored to absorb moderate to high levels of use while protecting soil, water, and air resource conditions.

Maintenance is performed to protect the routes and minimize effects to soil and water resources. Routes may be closed seasonally or during inclement weather to protect resources. Off-route and other unauthorized OHV use is not allowed. When such use occurs to a chronic degree, the routes are closed permanently or until the situation is corrected. New routes are considered for development only when there is a demonstrated need, interest, and a developed partnership with user groups. New routes are evaluated using the OHV Screening Criteria outlined in Appendix J.

Table 3-1. Jefferson National Forest Licensed Off Road Vehicle Routes

Name	Road No.	Miles	District
Mill Creek Road	229	6.3	New Castle
Potts Mtn. West-Black Rd	5023	3.5	New Castle
Potts Mtn. East	177.1	6.7	New Castle
Potts Mtn. Jeep Road	5036	6.8	New Castle
Price Mountain	5012	2.0	New Castle
Bailey Gap Road	177.4	3.7	New River Valley
Hogback Road	640	7.2	New River Valley
Walker Mountain Road	206	6.2	New River Valley
Wolf Creek Mountain Road	199	5.3	New River Valley
Total		**47.7**	

Additional desired conditions for full size off road vehicle routes are described under the management prescription in which the route is located.

ATV Use Area Desired Condition:

ATV use areas provide primarily motorized recreation opportunities. While motorized recreation is emphasized on designated routes, other routes could be used for hiking, mountain biking, and horseback riding. Other recreation opportunities such as hunting, fishing, and berry picking occur within the prescription area adjacent to the designated route corridors. Physical impacts are confined to the immediate trail or road profile and do not spread beyond. Though physical impacts from ATV use are confined to the immediate road or trail environment, sounds of motorized vehicles may be audible in other sections of the prescription area. Outdoor skills are of moderate or low importance for visitors except where knowledge of specialized activities such as driving ATVs is critical.

The landscape character is natural appearing with variations created by the recreational facilities. Recreationists enjoy traveling routes through a variety of landscapes. Along many of the routes, the views are restricted to the immediate foreground by vegetation and natural landform, but occasional openings reveal middleground or distant background vistas. Constructed routes blend well with the natural environment. Small created openings in the forest canopy may be apparent and visitors may see evidence of resource management activities; however, treatments blend with the natural landscape and vegetation diversity is enhanced over time. Constructed facilities are visually subordinate to the land.

A mix of forest successional stages will characterize use areas, with an emphasis on early-successional forests. Up to 16 percent of forested land may be in early-successional forest conditions; however, there are no early successional wildlife habitat objectives associated with this prescription. Lands within this prescription area are classified as suitable for timber production. Roads used or constructed to facilitate vegetation treatment are managed to provide non-conflicting access for both timber harvest and motorized recreation uses.

Wildlife species associated with early successional forest habitats and mixed landscapes expected to inhabit these areas include: eastern towhee, white-eyed vireo, least weasel, whip-poor-will, and orchard oriole. This management prescription also provides suitable habitat for ruffed grouse, eastern wild turkey and black bear. These areas provide excellent opportunities for wildlife viewing and hunting.

7C OHV ROUTES AND ATV USE AREAS

OHV ROAD AND TRAIL STANDARDS

7C-001 Locate OHV roads and trails outside riparian areas except at designated stream crossings. Use bridges or culverts at stream crossings where possible. When fords are used, provide at least 50 feet of gravel or other effective hardening/stabilization technique on stream approaches. Use erosion stone or larger rock to increase road-bearing strength at the water/land interface.

7C-002 Candidate OHV roads and trails are eliminated or mitigating measures are planned where soil movement cannot be kept within acceptable standards.

7C-003 Monitor soil and water impacts.

Roads

7C-004 Roads managed for licensed full size off road vehicles are open year round or seasonally with a C2 road management objective.

7C-005 Designated OHV routes remain open to public use unless unacceptable resource damage occurs.

7C-006 Favor repair, reconstruction, and relocation of portions of OHV routes receiving unacceptable resource damage over closing the entire route. When chronic problems occur the entire route may need to be closed.

7C-007 Include consideration of possible licensed full size off road vehicle routes in the roads analysis process.

ATV USE AREA STANDARDS

Water, Soil, and Air

7C-008 The trail system within each ATV use area must have a monitoring plan prior to establishment.

Terrestrial and Aquatic Species

7C-009 Limit creation of early-successional forest habitat to 16 percent of forested acres (based on the contiguous prescription area). Include naturally occurring patches of early successional forest two acres and greater in size when calculating allowable levels of early-successional forest creation.

7C-010 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

7C-011 Favor the retention of large (>20" d.b.h.[2]) standing snags and den trees when implementing silvicultural treatments.

[2] Diameter breast height, in other words, the diameter of the tree trunk as measured at 4 ½ feet above the ground.

Vegetation and Forest Health

7C-012 The forest health strategy is to diminish the occurrence of pest problems by managing host-type conditions at low hazard. Use appropriate and practical suppression of pests, both non-native and native, with all available tools as the normal practice.

7C-013 Assure salvage is rapid, complete, and emphasizes marketing timber before its value decreases.

Timber Management

7C-014 These areas are suitable for timber production.

7C-015 Use even and uneven-aged silvicultural systems. Thinning and group selection may be employed to increase the structural diversity of the prescription area.

7C-016 Regeneration units range from 5 to 40 acres in size.

7C-017 Regeneration harvest areas are primarily coppice with reserves with 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration and two-aged silvicultural systems which leave 20-40 square feet of basal area per acre. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

7C-018 Clearcut harvest systems occur when necessary to achieve specific wildlife habitat objectives. Thinning and group selection silvicultural systems are also employed to provide the structural diversity required by some species within this habitat association.

7C-019 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	80-100
Cove hardwoods	70-90
White pine	60-80
Yellow pine	70-90
Scarlet oak/Black oak	70-90

Prescribed Fire and Wildland Fire Use

7C-020 Prescribed fire and wildland fire use are allowed to: create openings that stimulate soft mast production and browse; encourage oak sprouting; maintain, restore, and enhance native forest communities; ensure the continued presence of fire-dependent ecosystems; improve threatened, endangered, sensitive, and locally rare species habitat; and reduce fuel buildups. It is also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

Trail Design

7C-021 Design and locate the trail network to discourage illegal access to areas off the designated routes. Full advantage is taken of natural and man-made features to use as physical barriers to illegal use.

7C-022 Prioritize new route locations as follows: 1) Existing open or closed system roads, 2) Closed or obliterated roads, 3) New construction.

7C-023 Construct trail and road systems that include both single-track, narrow trails for the motorcycle and ATV user as well as roads that may be used for larger four-wheel drive vehicles and for timber removal.

7C-024 Minimize user conflicts and safety hazards that may exist with other recreation users and between full size four-wheel drive vehicle users and ATV and motorcycle users, through trail design, layout, and signing.

7C-025 Minimize adverse effects on the land and resources, through trail design, layout, and management. Minimize damage to soil, watershed, vegetation, wildlife habitat, or other natural, heritage, and historical resources, and disturbance of wildlife on the public lands.

7C-026 Plan timber removal concurrently with possible route locations and opportunities.

7C-027 Obliterate decommissioned routes through restoration to their natural profile and revegetate to prevent continued use.

Trail Management

7C-028 Actively recruit volunteer organizations through the Adopt-A-Trail program to become involved in the long-term construction and maintenance of trail systems.

7C-029 Relocate or close routes when unacceptable adverse effects occur or are likely to occur. The routes or trails remain closed until the adverse effects are eliminated and until measures are implemented to prevent recurrence.

7C-030 Relocate or close existing routes located in or adjacent to sensitive areas. Restore and revegetate unneeded old routes to their natural profile.

7C-031 Trail system designs with a series of loops are encouraged. This results in a more compact trail system that confines impacts.

Public Safety and Law Enforcement

7C-032 Promote public safety and effective law enforcement.

7C-033 Provide sanitary facilities in ATV areas.

7C-034 Within ATV areas, provide public information that, as a minimum, includes maps showing open, closed, and restricted routes and areas, as well as the conditions of such use.

Monitoring

7C-035 The effects of vehicle use, noise levels, enforcement of restrictions and closures are closely monitored and evaluated.

Scenery

7C-036 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

7D CONCENTRATED RECREATION ZONES

This management prescription is allocated to approximately 6,000 acres (1%) across the Jefferson National Forest.

EMPHASIS:

Concentrated Recreation Zones are managed to provide the public with a variety of recreational opportunities in visually appealing and environmentally healthy settings. Developed recreation areas, concentrated use areas, and areas of high density dispersed recreation activity form Concentrated Recreation Zones. Facilities are provided to enhance the quality of the recreational experience and/or to mitigate damage to the affected ecosystems. These areas also serve as "gateways" to the wide diversity of

recreation opportunities on the remainder of the forests.

DESIRED CONDITION:

Visitors are able to choose from a wide variety of recreation opportunities in high quality, well maintained developed or dispersed settings. Campgrounds, picnic sites, boat ramps, river access sites, swimming beaches, interpretive sites, primitive vehicle camps, rifle ranges, trailheads and concentrated trail systems, are all examples of facilities found in Concentrated Recreation Zones. Other facilities consistent with the mission and complimentary to the ecosystem may also be provided. Constructed facilities are normally visually subordinate to the land and depend on the development scale appropriate to the recreational opportunity spectrum class. Facilities outside the developed recreation sites are provided to protect resources. Facilities that provide for user convenience, as well as for protection of resources, are constructed and/or maintained in the developed recreation areas. Outdoor skills are generally of low importance except where knowledge of specialized activities, (i.e. boating or horseback riding) is critical. Trails through this area are well-marked and may include features for visitors with special access needs, loop systems, and/or interpretive programs. Motorized access and their support facilities (i.e. roads, parking lots, or water access) are emphasized, although non-motorized experiences (i.e. walking and viewing nature) are also often present.

Use may be highly concentrated in some spaces or relatively uncrowded in other sections of Concentrated Recreation Zones. Recreation information and regulations are provided to make the visitors' experience more enjoyable. Interpretive programs may also be offered to enhance the visitor's educational and recreational experience. Access to fishing, hunting, and nature study are emphasized. Fish stocking is appropriate for Concentrated Recreation Zones.

The landscape character is a cultural enclave in natural appearing surroundings. A visually appealing landscape is emphasized by providing an open park-like setting highlighting large diameter trees and featuring special attractions like rock outcroppings and waterfalls. Management activities maintain a healthy mid-successional forest of mixed hardwoods, hemlocks, and white pines. Understory vegetation includes a variety of native deciduous and evergreen flowering trees, shrubs and wildflowers. These areas may also include natural appearing open areas, balds, or pastoral landscapes. The scenic integrity objectives are in the upper values of high to moderate.

Some of these concentrated recreation areas are within the foreground of the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Vegetation is influenced to a large degree by humans, both through management for aesthetics and safety and through the high level of recreation use. Commercial timber harvest is appropriate to maintain the long-term goals of a diverse and vigorous forest emphasizing recreation, scenery, and visitor safety. Timber harvesting operations focus on what is retained in the forest, not on wood fiber production. Timber harvest is carefully timed and designed to be subtle. Integrated pest management is used to eradicate or suppress insects, diseases, and non-native, invasive vegetation.

Even and uneven-aged forest communities continue to develop throughout the area, along with medium and small patches of late successional to old growth forest communities. Up to four percent of forested land may be in early-successional forest

conditions created both naturally and purposefully when compatible with the recreation and scenic objectives of the concentrated recreation area; however, no early successional habitat objectives are associated with this prescription. Wildlife viewing opportunities are maintained and expanded through livestock grazing, cultivation, mowing, and burning of openings and pastoral areas.

STANDARDS

Terrestrial and Aquatic Species

7D-001 Wildlife and fish habitat improvements are allowed to enhance wildlife viewing and fishing opportunities in a manner complimentary to the area. Existing wildlife openings, pastoral areas, or old fields may be maintained. Expansion of existing openings and/or creation of new openings may occur. Maintenance methods may include cultivation, grazing, mowing, and burning. Use of native species will be emphasized.

7D-002 Improvements appear natural and remain subordinate to the landscape. Watchable wildlife species habitat improvements are encouraged.

7D-003 Hunting is prohibited within developed recreation sites.

Vegetation and Forest Health

7D-004 The forest health strategy is to prevent the occurrence of pest problems by managing host-type conditions at low hazard. Aggressive suppression of pests, both non-native and native, with all available integrated pest management tools is normal practice. Favor the most effective control method. Salvage, cut and leave, and pruning are rapid and complete to protect the health and safety of visitors and facilities.

7D-005 Allow vegetation management activities to:

- Maintain developed and dispersed recreation facilities, including roads and trails;
- Maintain open areas, old field habitats, pastoral settings, and vistas that enhance the scenic qualities of the recreation area;
- Enhance or rehabilitate scenery, including:
  - Create aesthetically desired stand structure and species composition including a pleasing mosaic of tree species of various densities and stem sizes, park like effects, and enhancement of fall color species;
  - Feature flowering trees, character trees, and shrub species;
- Enhance both game and non-game wildlife habitat;
- Minimize impacts from insect or disease outbreaks and rehabilitate damaged areas;
- Reduce fuel buildups;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

7D-006 Prepare vegetation management plans that emphasize damage prevention practices for developed recreation areas.

Timber Management

7D-007 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

7D-008 Clearcutting may only be used to open up vistas, create spatial diversity along travelways, decrease straight line effect of cleared utility corridors, create watchable wildlife openings, for insect and disease suppression, or for scenic rehabilitation.

Wildland Fire Suppression

7D-009 Lightning fires are generally suppressed to minimize acreage burned due to high levels of public use and infrastructure investments in these areas.

Prescribed Fire and Wildland Fire Use

7D-010 Prescribed fire is permitted for vegetation management to meet scenery, landscape character and hazard fuels reduction objectives. In developed recreation areas, evidence of firelines is obliterated as soon as practicable.

7D-011 Wildland fire use is prohibited.

Recreation

7D-012 Concentrated-use areas are inspected annually and high-risk conditions are corrected, identified to the public, or the area is closed.

7D-013 A site safety inspection is completed annually. Documented high-risk conditions are corrected prior to seasonal use in all developed recreation areas.

7D-014 Rest rooms are provided, are functional and in good repair.

7D-015 To keep humans free from unhealthy exposures to human waste, the waste is removed immediately upon discovery or notification.

7D-016 High-risk site conditions that develop during the use season are mitigated or the site is closed.

7D-017 These areas are unsuitable for designation of ATV use areas, although trailheads and connecting trails to adjacent ATV use areas are allowed.

7D-018 Licensed OHV routes along existing roads may be designated in these areas.

Appalachian National Scenic Trail

7D-019 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

7D-020 The landscape character is natural appearing, pastoral, or historic with variations created by the recreational facilities.

7D-021 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

7D-022 Rifle ranges are managed to meet or exceed a low scenic integrity objective across all scenic classes.

Roads

7D-023 All roads, facilities, and signing are designed to blend in with surroundings.

7D-024 The standard of road is commensurate with the recreation development level.

7D-025 Existing open public roads are maintained at or above current levels to provide for public access and safety.

7D-026 Road decommissioning is informed by a watershed-scale or site-specific road analysis.

Minerals

7D-027 These areas are available for federal oil and gas leasing with controlled surface use to protect the recreation resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on recreation and scenery.

7D-028 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the recreation area itself; and b) use is necessary to protect the resources and values of the area.

Lands and Special Uses

7D-029 These areas are unsuitable for new linear rights-of-way or communication sites, with the exception that local electrical distribution lines are allowed. Other special uses are authorized if consistent and compatible with the goals and objectives of these areas.

7E1 DISPERSED RECREATION AREAS—UNSUITABLE

This management prescription is allocated to approximately 19,600 acres (3%) across the Jefferson National Forest.

EMPHASIS:

These are areas of non-formal camping and recreational use in various locations across the forest. Dispersed recreation demand is managed to provide the public with a variety of recreation opportunities in a setting that provides quality scenery, trails, and limited facilities. These are frequently areas of low recreation use, low hunting use, and poor access.

DESIRED CONDITION:

Visitors are able to choose from a wide variety of non-motorized dispersed recreation opportunities such as hiking, mountain bike riding, rock climbing, nature study, hunting, fishing, and river running. Limited motorized access may be available in some parts of these areas.

Visitors seldom see other people in some parts of these areas. Trails are maintained, but seldom improved or expanded. Outdoor skills are of moderate importance for visitors except where knowledge of specialized activities such as horseback riding, mountain biking, rock climbing, and boating is critical. Construction of new facilities is to increase recreation capacity is limited due to poor access.

These areas are unsuitable for timber production; however, commercial timber harvest is appropriate to maintain the long-term goals of a diverse and vigorous forest with sensitivity to dispersed recreation and scenic values. Prescribed fire, integrated pest management and commercial timber harvest are appropriate to manage vegetation. Integrated pest management is used to eradicate or suppress insects, diseases, and non-native, invasive vegetation. Wildland fires are used to restore and maintain historic fire regimes. Wildlife viewing opportunities are maintained through livestock grazing, cultivation, mowing, and burning of openings and pastoral areas.

These areas are characterized by a predominance of mid- and late-successional forests with a high to intermediate tolerance to shade. The valued natural appearing landscape character appears predominately intact with no noticeable deviations. Uneven-aged forest communities begin to develop throughout the area, along with large, medium and small patches of late successional to old growth forest communities. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the recreation and scenic objectives of the area.

OBJECTIVES

7E1-OBJ1 Obtain rights-of-way or easements to increase access to these areas.

STANDARDS

Terrestrial and Aquatic Species

7E1-001 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife may be present and maintained, and expansion of openings or creation of new permanent openings of this type may occur. Native species are emphasized when establishing food plants for wildlife. Some openings provide permanent shrub/sapling habitat as a result of longer maintenance cycles.

Rare Communities and Old Growth

7E1-002 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

7E1-003 Native forest insect and disease outbreaks are controlled only to prevent unacceptable damage to resources on adjacent land or to protect threatened, endangered, and sensitive species. Non-native, invasive insects and diseases may be eradicated or suppressed to prevent a loss of the old growth community. Favor biological control methods.

7E1-004 Eradicate non-native invasive plants when the infestations are isolated. Use approved hand-applied chemicals, when necessary.

7E1-005 Allow vegetation management activities to:

- Enhance or rehabilitate scenery;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Restore, enhance, or mimic historic fire regimes;

- Reduce insect and disease hazard;
- Control non-native invasive vegetation.
- Provide for public health and safety;

Timber Management

7E1-006 These lands are classified as unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

Prescribed Fire and Wildland Fire Use

7E1-007 Vegetation management may be accomplished with management-ignited prescribed fire, wildland fire use, and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

7E1-008 New facilities such as trails, trailheads, toilets, and parking areas are allowed, commensurate with the public use of the area.

7E1-009 Designated OHV routes are allowed.

Scenery

7E1-010 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

7E1-011 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive non-motorized areas within this prescription area.

Roads

7E1-012 Existing open public roads are maintained at or above current levels to provide for public access and safety.

7E1-013 All roads, facilities, and signing are designed to blend in with surroundings.

7E1-014 Road decommissioning is informed by a watershed-scale or site-specific roads analysis.

7E2 DISPERSED RECREATION AREAS-SUITABLE

This management prescription is allocated to approximately 51,800 acres (7%) across the Jefferson National Forest.

EMPHASIS:

These areas receive moderate to high recreation use and are managed to provide a variety of dispersed recreation opportunities, improve the settings for outdoor recreation, and enhance visitor experiences, in a manner that protects and restores the health, diversity, and productivity of the land. These areas provide a sustained yield of timber products; however timber harvest methods used are compatible with the recreational and aesthetic values of these lands.

DESIRED CONDITION:

7E2 DISPERSED RECREATION AREAS-SUITABLE

These areas are characterized by easy access and are capable of sustaining a relatively high number of recreationists in a manner that protects the surrounding water, soil, vegetation, and wildlife. Visitors enjoy the natural appearing landscape character of these settings and are able to choose from a wide variety of well-maintained nature-based recreation opportunities. High quality forest roads and well-marked trails through these areas provide easy access for seniors, urban visitors, and recreationists with special access needs. Management is designed to meet the growing demands for pleasure driving, day hiking, mountain biking, horseback riding, dispersed camping, backpacking, hunting, fishing, nature study, and nature photography and to showcase high quality scenery from travelways and concentrated use areas maintained through low intensity, planned vegetation management activities.

Some areas may also provide licensed off road vehicle driving, rock climbing, river running, hang gliding, or a variety of other nature-based outdoor recreation activities. Trails through this area are well-marked and may include features for visitors with special access needs, loop systems, and/or interpretive programs. Facilities within these areas may include portable or permanent toilets, trash receptacles, fire grills, signs, or vehicle barriers; however, facilities are generally rare and are only provided for health and sanitation or to protect the area from resource damage.

The sights and sounds of other visitors and motorized vehicles are normally present. The opportunity to encounter other visitors is high along roadways, at parking areas, pullouts, and overlooks, but may be moderate to low on trails away from congregated use areas. Visitors are rarely challenged to rely on their own physical abilities and outdoor skills. Once away from open roads and trailheads, opportunities for solitude are available. In these more remote areas, visitors may take on some risk and be challenged to rely on their own personal physical abilities and primitive recreational skills such as bouldering, climbing, stream fording, and orienteering.

Roads are generally open to motorized activities. Non-motorized and motorized trails are maintained, improved, or expanded to meet local demands provided watershed and ecosystem health are not negatively affected. Limitations of use are implemented if any dispersed activity results in, or is expected to result in, negative affects to watershed or ecosystem health.

A mix of forest successional stages characterizes these areas. Infrequent pastoral and historic/cultural enclaves may also exist. From primary travelways and concentrated use areas, the valued character of these landscapes appears intact with no noticeable deviations. Even and uneven-aged forest communities are managed throughout the area, along with the continued development of medium and small patches of late successional to old growth forest communities. In order to provide a diversity of wildlife habitats for hunting and wildlife viewing, it is an objective to have at least four percent of forested lands in early-successional forest conditions created both naturally and purposefully when compatible with the recreation and scenic objectives of these areas. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities.

Wildlife species associated with mid- to late-successional deciduous forest habitats and mixed landscapes that are expected to inhabit these areas include: hooded warbler, southern pigmy shrew; whip-poor-will; least weasel, downy woodpecker; eastern gray squirrel; and orchard oriole. This management prescription also provides suitable habitat for ruffed grouse, eastern wild turkey and black bear. These areas provide excellent opportunities for wildlife viewing and hunting.

These areas are suitable for timber production. Commercial timber harvest is used to

7E2 DISPERSED RECREATION AREAS-SUITABLE

maintain the long-term goals of a diverse and vigorous forest with sensitivity to dispersed recreation and scenic values. Prescribed fire, wildland fire use, integrated pest management and commercial timber harvest are appropriate to manage vegetation. Wildland fires are used to restore and maintain historic fire regimes. Wildlife viewing opportunities are maintained and expanded through livestock grazing, cultivation, mowing, and burning of openings and pastoral areas.

Timber harvesting operations focus on what is retained in the forest, not on wood fiber production. Timber harvest is carefully timed and designed to be subtle. Group selections, individual tree selections, thinnings, and shelterwood harvests are predominately used. Clearcutting may occasionally be used to open up vistas, create spatial diversity along travelways, decrease straight line effect of cleared utility corridors, create watchable wildlife openings, for insect and disease suppression, or for salvage/scenic rehabilitation.

OBJECTIVES

7E2-OBJ1 Maintain a minimum of 4 percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 2 acres in size and greater).

STANDARDS

Terrestrial and Aquatic Species

7E2-001 Wildlife and fisheries habitat improvements are allowed to enhance wildlife viewing, hunting, and fishing opportunities in accordance with scenic integrity objectives. Watchable wildlife species habitat improvements are encouraged.

7E2-002 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

7E2-003 Limit creation of early-successional forest habitat to 10 percent of forested acres.

Rare Communities and Old Growth

7E2-004 Old growth patches of all sizes and community types are maintained and restored.

7E2-005 Interpretation of rare communities is encouraged when carefully controlled to promote understanding and stewardship.

Vegetation and Forest Health

7E2-006 Allow vegetation management activities to:

- Provide 4-10 percent early successional habitat;
- Create aesthetically desired stand structure and species composition including a pleasing mosaic of tree species of various densities and stem sizes, park like effects, and enhancement of fall color species;
- Maintain developed recreation facilities, including roads and trails;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce insect and disease hazard;

- Control non-native invasive vegetation;
- Maintain, enhance, or restore the diversity and complexity of native vegetation;
- Reduce fuel buildups;
- Restore, enhance, or mimic historic fire regimes; or
- Provide for public health and safety.

Timber Management

7E2-007 These areas are suitable for timber production where hunting recreation and watchable wildlife are emphasized.

7E2-008 Even and uneven aged management systems are allowed, with an emphasis on group selection, thinning and shelterwood treatments. Commercial thinning is commonly used to develop park-like stands and larger trees for aesthetic reasons.

7E2-009 Reserve trees in even aged harvest areas display good form.

7E2-010 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Prescribed Fire and Wildland Fire Use

7E2-011 Vegetation management may be accomplished with management-ignited prescribed fire, wildland fire use, and mechanical treatments as an appropriate method of reducing costs associated with these activities.

Recreation

7E2-012 New facilities such as trails, trailheads, toilets, and parking areas are allowed, commensurate with the public use of the area.

Scenery

7E2-013 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

Roads

7E2-014 Existing open public roads are maintained at or above current levels to provide for public access and safety.

7E2-015 All roads, facilities, and signing are designed to blend in with surroundings.

7E2-016 Road decommissioning is informed by a watershed-scale or site-specific roads analysis.

7F BLUE RIDGE PARKWAY VISUAL CORRIDOR

7F BLUE RIDGE PARKWAY VISUAL CORRIDOR

This management prescription is allocated to approximately 3,900 acres (<1%) across the Jefferson National Forest. The Blue Ridge Parkway was established June 30, 1936 as a recreation-oriented motor road connecting Shenandoah National Park in Virginia with the Great Smoky Mountains National Park in North Carolina. The Parkway itself is administered by the USDI Park Service as an elongated park for public use and enjoyment through safe, uninterrupted, leisure motor travel, which provides for the conservation and interpretation of the natural and cultural resources of the Southern Appalachian Mountains. The Blue Ridge Parkway is known for spectacular mountain and valley vistas, quiet pastoral scenes, sparkling waterfalls, colorful wildflower and foliage displays, and its interpretation of mountain history and culture.

EMPHASIS:

The emphasis of this management prescription is to manage National Forest System lands that can be seen from the Blue Ridge Parkway in a manner which positively contributes to the Parkway visitor's experience along this motorized national treasure. Views from Parkway overlooks appear natural and retain high to very high scenic integrity.

DESIRED CONDITION:

The Blue Ridge Parkway visual corridor provides exceptional opportunities for motorized recreation, including scenic driving. The views along the Parkway are natural appearing and include a variety of landscape characters, ranging from a continuous overstory canopy of large hardwoods and pines, to pastoral, cultural, rural, and suburban. Urban landscapes like the city of Roanoke may be seen in the background from some scenic overlooks. In the foreground, understory vegetation and ground cover provide colorful accents and interesting textures for each season. Road corridor improvements and interpretive facilities are evident changes to the natural environment, but these man-made alterations fit well with the character of the surrounding landscape. Forest management activities are not evident to the average visitor.

The Parkway itself provides the primary access through the area, with several Forest development roads terminating at, or crossing, the Parkway. The potential for encounters with other Forest visitors is high, especially at Parkway facilities, which include visitor centers, pullouts, overlooks, interpretive kiosks, trails, restrooms, and picnic sites. Scenic, historic and/or natural resources are interpreted for the benefit of visitors. These recreation and interpretive facilities are designed and constructed to complement the natural or cultural environment surrounding the Parkway. There is little opportunity for remoteness. Visitors experience low risk and little need to rely on personal physical abilities or primitive outdoor recreation skills within the Parkway corridor.

Vegetation is influenced both by natural processes and humans. Low intensity commercial timber harvest is appropriate to maintain the long-term goals of a diverse and vigorous forest with sensitivity to dispersed recreation and scenic values. Relatively longer rotation ages and a lower percentage of early successional forest in these areas reflect a "low intensity" approach to vegetation management and the higher priority of protecting the values of the Blue Ridge Parkway. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully. Timber harvesting operations focus on what is retained in the stand, not on wood fiber production. Timber harvest practices are modified to recognize the aesthetic and recreational values of these lands. Group selections, individual tree selections, thinnings, and light shelterwood harvests are predominately used. Clearcutting and shelterwood

harvests leaving less than 35 square feet of basal area are only used within areas seldom seen from the Parkway and its overlooks.

Prescribed fire, wildlife habitat improvements, and integrated pest management are also appropriate management tools to manage vegetation. Wildland fires are managed in cooperation with the Park Service using an appropriate management response to protect Parkway resources and visitor safety.

These areas are characterized by a predominance of mid- and late-successional forests with a high to intermediate tolerance to shade. Forest structure varies according to ecological factors, but largely consists of a mature overstory of hardwoods, occasionally mixed with pines, a fairly open midstory, and a well-developed herbaceous and shrubby understory. Understory vegetation includes a variety of native deciduous and evergreen flowering trees, shrubs and wildflowers. Even- and uneven-aged forest communities are managed throughout the area, along with continued development of medium and small patches of late successional to old growth forest communities. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the scenic objectives of the parkway corridor; however, no early successional habitat objectives are associated with this prescription. Wildlife viewing opportunities are maintained and expanded through cultivation, mowing, and burning of openings and pastoral areas.

STANDARDS

General

7F-001 All management activities within this corridor must be compatible with maintaining, rehabilitating, or enhancing views from the Blue Ridge Parkway.

7F-002 Short-term scenic integrity objectives of rehabilitation and enhancement may be used until scenic integrity objectives are achieved.

Terrestrial and Aquatic Species

7F-003 Wildlife and fisheries habitat improvements are allowed to enhance wildlife viewing, hunting, and fishing opportunities in accordance with scenic integrity objectives. Watchable wildlife species habitat improvements are encouraged.

7F-004 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

7F-005 Up to 4% of this prescription area may be in early successional habitat conditions.

Rare Communities and Old Growth

7F-006 Old growth patches of all sizes and community types are maintained and restored.

7F-007 Interpretation of rare communities is encouraged when carefully controlled to promote understanding and stewardship.

Vegetation and Forest Health

7F-008 Forest structure is managed to favor flowering trees and shrubs.

7F-009 Control insect and disease outbreaks, when necessary, to protect the scenic

values, to reduce hazards to visitors, or for safety or legal reasons. Eradicate recently established non-native pests when possible. Favor the most effective control method.

7F-010 Allow vegetation management activities to:

- Maintain developed recreation facilities, including roads and trails;
- Enhance or rehabilitate scenery, including:
  - Create aesthetically desired stand structure and species composition including a pleasing mosaic of tree species of various densities and stem sizes, park-like effects, and enhancement of fall color species;
  - Feature flowering trees, character trees, and shrub species;
- Enhance both game and non-game wildlife habitat;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation; or
- Provide for public health and safety.

7F-011 Salvage is allowed for scenic rehabilitation, fuel reduction, and to capture the economic value of dead, dying and diseased trees.

Timber Management

7F-012 Areas seldom seen from the Blue Ridge Parkway and its associated overlooks are suitable for timber production.

7F-013 The remainder of this corridor is unsuitable for timber production. Vegetation management may be accomplished with commercial timber sales as an appropriate method of reducing costs associated with these activities.

7F-014 Use even and uneven-aged silvicultural systems. Uneven-aged forest management (e.g. group selection, individual tree selection) practices are designed to result in forest structure and composition consistent with late-successional deciduous forest habitats over the long-term.

7F-015 Regeneration units range from 2 to 25 acres in size, clustered on the landscape.

7F-016 Regeneration harvest areas are primarily coppice with reserves with 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration and two-aged silvicultural systems which leave 20-40 square feet of basal area per acre. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

7F-017 Clearcut harvest systems occur when necessary to achieve specific wildlife habitat objectives. Thinning and group selection silvicultural systems are also employed to provide the structural diversity required by some species within this habitat association.

7F-018 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-180
Cove hardwoods	120-180
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Wildland Fire Suppression

7F-019 Wildland fires are managed in cooperation with the Park Service using an appropriate management response to protect Parkway resources and visitor safety.

Prescribed Fire and Wildland Fire Use

7F-020 Prescribed fire and wildland fire use are coordinated with the Park Service to accomplish both Park Service and Forest Service management objectives in this corridor and adjacent management prescriptions.

Recreation

7F-021 Interpretive services including trails, signs, viewing areas, self-guided programs, and buildings are provided to enhance the understanding of, and appreciation for the natural environment, cultural resources, and the Parkway's special features.

Scenery

7F-022 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

Range

7F-023 Livestock grazing is not permitted.

Minerals

7F-024 The Blue Ridge Parkway corridor is available for federal oil and gas leasing with controlled surface use to protect the views and other values of the corridor. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on scenic resources and other values.

7F-025 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the scenic resources and other values.

7F-026 Permit new borrow pits, provided they meet the scenic integrity objective. Rehabilitate or reclaim existing borrow pits that are currently not meeting the scenic integrity objective.

Roads

7F-027 Permit new access roads, provided they quickly enter and leave the seen area and do not parallel existing travelways.

7F-028 All roads, facilities, and signing are designed to blend in with surroundings.

7F BLUE RIDGE PARKWAY VISUAL CORRIDOR

7F-029 Density of open roads and/or motorized vehicle trails remains near the current level throughout the planning period, with only small increases or decreases.

Lands and Special Uses

7G PASTORAL LANDSCAPES

7F-030 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Continue existing uses. Require necessary mitigation techniques, including screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of upgraded, utility corridors, or communication sites.

7F-031 Authorize other special uses if consistent and compatible with the goals and objectives of this area.

7G PASTORAL LANDSCAPES

This management prescription is allocated to approximately 3,700 acres (<1%) across the Jefferson National Forest. These areas include those landscapes identified on the Jefferson National Forest as part of the Landscapes for the Future program initiated in the mid 1970's. Many of these previously privately owned pastured farmsteads that were acquired on the Mount Rogers National Recreation Area were earmarked to maintain their pastoral landscape character in support of the Rural Americana theme of the NRA.

EMPHASIS:

The emphasis is on providing, through maintenance or restoration, high quality, generally open landscapes with a pastoral landscape character. These landscapes are frequently found in visually important travel corridors.

DESIRED CONDITION:

Visitors to these landscapes view and experience high quality pastoral scenery in a setting conducive to a variety of recreational experiences. These areas reflect a Rural Americana landscape character theme that represent remnants of a pleasant, peaceful, simple rural life. The backdrop for many of these areas is natural appearing forested landscapes or other similar privately owned pastoral landscapes. Human cultural modification is evident in the form of pastures, hedgerows, fencelines, farm paths, paved roads and dirt travelways, an occasional outbuilding, springhouse or barn all complementing the desirable pastoral landscape attributes of the rural setting. Grazing cattle, horses, or sheep are commonly observed. The predominantly grassy openings vary in size and shape as a result of traditional cultural land use patterns. Some exhibit straight-lined edges and others follow natural landforms and watercourses.

Recreation uses include pleasure driving, photography, watching wildlife, and participating in dispersed recreation such as picnicking, strolling, horseback riding, hunting, and fishing. These areas are typically accessible by motor vehicle and some may have small parking areas or pullouts to allow visitors to stop and walk through the area. These areas provide important habitat for early successional species and watchable wildlife habitats. Examples include songbirds, woodpeckers, hummingbirds, butterflies, deer, rabbits, foxes, turkeys, waterfowl, and squirrels.

The sights and sounds of other visitors and motorized vehicles are common, but are moderated in areas away from congregated use areas. Visitors take on low risk and are not challenged to rely on their own physical abilities and outdoor skills. Facilities, though minimal, are designed to fit the character of the specific sites where they are located. Facilities might include pullouts, small parking areas, trailheads, bulletin boards, interpretive signage, fence stiles, rail, and other fences. Trails, if present, are generally of a low development scale and do not have hardened surfaces.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Vegetation consists predominantly of low grasses and wildflowers with some native deciduous and evergreen shrubs interspersed with an occasional tree, hedgerow, or small woodlot. For the most part the areas are on gently rolling terrain, some with exposed surface rock, rock outcrops, and meandering streams.

Wildlife species associated with grassland habitats expected to inhabit these areas include: whitetail deer, grasshopper sparrow, vesper sparrow, black rat snake, loggerhead shrike, and orchard oriole. These areas provide excellent opportunities for wildlife viewing and hunting. High elevation grasslands and balds also provide optimal habitat for the golden-winged warbler and chestnut-sided warbler.

Sound range management practices help to maintain important old-field and grassland habitats, high mountain vistas on the Mount Rogers NRA and aesthetically pleasing pastoral settings. National forest grazing allotments demonstrate how innovative range management practices can maintain and restore vegetated riparian areas and stable streambanks within the range of natural variability. The national forest grazing program benefits local communities through meat production and assistance to small farmers.

STANDARDS

Vegetation and Forest Health

7G-001 These non-forest areas are unsuitable for timber management, although occasional tree removal or herbicide use may be necessary to manage forest encroachment, provide scenic views, improve visitor safety, or encourage the presence of certain watchable wildlife species.

7G-002 Eradicate non-native invasive plants.

Prescribed Fire and Wildland Fire Use

7G-003 Prescribed fire and wildland fire use are allowed to maintain pastoral landscapes.

Recreation

7G-004 New facilities such as trails, trailheads, toilets, and parking areas are allowed.

7G-005 These corridors are unsuitable for designation of new ATV routes or use areas. Allow designated routes for licensed OHVs only if cross-country use can be controlled.

Scenery

7G-006 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

7G PASTORAL LANDSCAPES

8A1 MIX OF SUCCESSIONAL HABITATS IN FORESTED LANDSCAPES

Appalachian National Scenic Trail

7G-007 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Range

7G-008 Grazing is permitted in order to maintain a pastoral setting on areas historically grazed or on open cultivated areas.

7G-009 Grazing is not permitted without an Allotment Management Plan (AMP). AMPs are reviewed annually and revised when necessary.

7G-010 Stocking of range allotments will not exceed the carrying capacity.

Roads

7G-011 All roads, facilities, and signing are designed to blend in with surroundings.

Lands and Special Uses

7G-012 New land acquisitions containing old farms and pastoral areas are often assigned this management prescription, although there is no objective to acquire these types of landscapes.

8A1 MIX OF SUCCESSIONAL HABITATS IN FORESTED LANDSCAPES

This management prescription is allocated to approximately 112,600 acres (16%) across the Jefferson National Forest. These areas lie within extensive (>75,000 acres) forested landscapes (public and private lands with 70 percent or greater forest cover) and are managed for a broad suite of animals and plants. Species associated with mid- to late-successional forest habitats, area-sensitive species, and those species which use a mix of habitats to fulfill different needs are all provided for in this prescription. Maintenance, enhancement and restoration of native forest communities, particularly southern yellow pine and the wide variety of oak forest communities, are closely related to the primary goal of this prescription area in order to provide important habitat components like hard mast and thermal cover to maintain energy reserves of species and support winter survival.

> *"The greatest burden on bird populations [in the Appalachian Mountains] may be reduced structural diversity and spatial heterogeneity due to insufficient acreage of both older age age classes and early successional conditions."*
>
> Partners in Flight, *Conservation of the Land Birds of the United States*. 2000.

EMPHASIS:

These areas provide a mix of habitats for plants and animals associated with mid- to late-successional forest habitats. Management activities are designed to: 1) retain forest cover across the prescription area; 2) increase spatial heterogeneity by increasing both early and late successional habitat conditions; 3) increase vertical vegetative diversity (canopy, sub-canopy, shrub, herbaceous layers all present and fairly well developed); 4) maintain or enhance hard and soft mast production; and 5) limit motorized access across the prescription area.

DESIRED CONDITION:

The landscape character of this area retains a natural, forested appearance. A mid- to late-successional forest greater than 40 years of age dominates the landscape. The area is interspersed with both forest communities greater than 100 years of age and herbaceous openings, providing diversity for both wildlife habitat and scenic attractiveness.

8A1 Mix of Successional Habitats in Forested Landscapes

Wildlife species associated with mid- to late-successional deciduous forest habitats that are expected to inhabit this area include: hooded warbler, southern pigmy shrew; whip-poor-will; least weasel, downy woodpecker; eastern gray squirrel; and orchard oriole. Because the landscapes in which this prescription lie, including private lands, are over 70% forest cover, one could also expect to find area-sensitive mid- to late-successional forest species including: ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides suitable habitat for eastern wild turkey and black bear.

The mix of forest communities desired varies by the landtype associations in which this prescription is allocated; however, the canopy generally consists of a mixed hardwood forest composed primarily of oaks and hickories in the uplands. The overstory is relatively closed, multi-layered, and moderately to densely stocked. The midstory is also multi-layered composed of a diversity of shrubs, vines, grape arbors, and saplings. Southern yellow pines increase as sites become drier on south-facing slopes and towards the ridge tops. Poplar, birch, and hemlock increase as moisture availability increases downslope to the coves. These cove forests, composed of mixed mesophytic and dry-to mesic oak communities are structurally diverse with canopy gaps and small openings. They frequently contain tall trees with large diameters and provide a home to cerulean warblers in some parts of the forest. Hooded warblers thrive where a dense shrub understory is maintained or enhanced.

A mix of forest successional stages characterizes these areas, but the focus is on mid- to late-successional forests with an objective of minimum of sixty percent of the area greater than 40 years of age and at least twenty percent in late-successional to old growth forest conditions. In addition, 4 to 10 percent of forested land is in early-successional forest conditions. Early-successional habitat in the 2100 to 2500 foot elevation range for species like the golden-winged warbler, is abundant in the form of open woodlands, regenerating forests, old fields, balds, and utility rights-of-way. Many patches of these habitats are over 20 acres in size and, where compatible with other multiple-use objectives, are clustered on the landscape to provide optimum habitat for dependent species.

Portions of this prescription area are managed by natural processes and prescribed fire and contribute to the older aged forest component across the prescription area. These lands include riparian areas, areas of low productivity like shale barrens, and lands where commercial timber harvest is uneconomical. The resulting landscape structure of this land allocation provides a forest matrix appropriate for linking large and medium-sized late successional to old growth patches. Trees greater than 120 years of age occur commonly as individuals, groups, or large areas. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Prescribed fire plays an important role in the maintenance of many of the forested communities found throughout this management prescription. Prescribed fire is frequently used to encourage oak sprouting and reduce competition from more shade tolerant species, to restore and maintain threatened and endangered species habitats, and to ensure the continued presence of fire-dependent southern yellow pine ecosystems. Prescribed fire and commercial timber harvest are employed to maintain the hard mast producing capabilities of the forest communities containing oaks and hickories.

Timber management to maintain and enhance hard mast production, especially oaks, is designed to establish and maintain reproduction of a diversity of tree species of mast bearing age in dominant and co-dominant crown classes. Trees with open-grown crowns receiving plenty of sunlight produce the most acorns and the creation of openings 2 acres in size and greater to get full sunlight on the forest floor helps maintain oak regeneration as well as stimulate soft mast and browse production. Maintenance of a diversity of forest age classes is also important in these areas to provide soft mast and herbaceous

vegetation.

The recreation experience in this area is not considered remote, although open road densities are fairly low. Access is provided through portions of the area on Forest Service and State roads with a gravel or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use may occasionally occur on designated trails in the area, but is generally discouraged to provide wildlife habitat security. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

Forest visitors on foot, horse, or bikes may experience some solitude in portions of this prescription area where roads are managed as closed, but feelings of challenge and risk are not expected. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, occasional encounters with other forest visitors can be expected, however these encounters are more frequent during spring and fall hunting seasons. This area provides excellent opportunities for wildlife viewing and hunting.

OBJECTIVES

8A1-OBJ1 Maintain a minimum of sixty percent of the area greater than 40 years of age.

8A1-OBJ2 Maintain a minimum of twenty percent of the area in late-successional to old growth forest conditions greater than 100 years of age.

8A1-OBJ3 Maintain a minimum of 4 percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 2 acres in size and greater).

8A1-OBJ4 Maintain an open road density at or below 1.25 miles per square mile (applies to National Forest System roads only).

STANDARDS

Terrestrial and Aquatic Species

8A1-001 Limit creation of early-successional forest habitat to 10 percent of forested acres (based on the contiguous prescription area).

8A1-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

8A1-003 Favor the retention of large (>20" d.b.h.) standing snags and den trees when implementing silvicultural treatments.

Rare Communities and Old Growth

8A1-004 Patches of old growth allocated to management prescriptions 6A, 6B, or 6C within an 8A1 management prescription block, contribute to the objective of a minimum of twenty percent of the area in late-successional to old growth forest conditions.

Vegetation and Forest Health

8A1-005 Maintain and restore southern yellow pine forest communities through artificial or natural regeneration. Regenerate pine-hardwood forest types artificially or

naturally to mixed pine-hardwood stands of native species to retain the pine component.

8A1-006 Manage for a diversity of oak species to minimize yearly fluctuations in acorn supplies.

8A1-007 The forest health strategy is to minimize the occurrence of pest problems by managing host-type conditions. Suppression of pests, both non-native and native, is accomplished with all available integrated pest management tools.

Timber Management

8A1-008 These areas are suitable for timber production.

8A1-009 Use even and uneven-aged silvicultural systems. Uneven-aged forest management (e.g. group selection, individual tree selection) practices are designed to result in forest structure and composition consistent with late-successional deciduous forest habitats over the long-term.

8A1-010 Regeneration harvest areas range in size from 2 to 40 acres.

8A1-011 Regeneration harvest areas are primarily coppice with reserves[3] with 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration and two-aged silvicultural systems which leave 20-40 square feet of basal area per acre. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

8A1-012 Clearcut harvest systems may occur when necessary to achieve specific wildlife habitat objectives. Thinning and group selection silvicultural systems are also employed to provide the structural diversity required by some species within this habitat association.

8A1-013 Regeneration harvest areas may occupy up to 16 percent of a project analysis area in order to provide 4-10 percent of an individual contiguous management prescription area in early successional forest habitat conditions and to cluster these conditions on the landscape.

8A1-014 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-180
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

[3] An even-aged silvicultural system designed to leave some midstory and overstory trees for visual and wildlife benefits while still allowing adequate sunlight to reach the forest floor for regeneration of shade intolerant species. The future stand of trees develops under the partial forest canopy left after harvest. In a coppice with reserves, the trees left after the initial harvest may be left standing, felled, or removed after stand regeneration reaches a suitable height.

Non-timber Forest Products

8A1-015 Commercial and personal use firewood collection is allowed.

Prescribed Fire and Wildland Fire Use

8A1-016 Prescribed fire and wildland fire use are allowed to: create openings that stimulate soft mast production and browse; encourage oak sprouting; maintain, restore, and enhance native forest communities; ensure the continued presence of fire-dependent ecosystems; improve threatened, endangered, sensitive, and locally rare species habitat; and reduce fuel buildups. It is also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

8A1-017 Wildlife openings, including linear strips, are signed to protect established vegetation from recreational use (e.g. horseback riding, mountain biking, OHV use, and camping) when a reoccurring problem exists.

8A1-018 Designated OHV routes and mountain bike use may be restricted if negatively impacting nesting or brood-rearing habitat.

Scenery

8A1-019 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

8A1-020 Clustering of early successional habitats occurs primarily within scenic classes 3 through 7.

8B EARLY SUCCESSIONAL HABITAT EMPHASIS

This management prescription is allocated to approximately 19,600 acres (3%) across the Jefferson National Forest.

EMPHASIS:

This area emphasizes providing optimal to suitable habitat for a variety of upland game species and plant and animal populations associated with early successional forest habitats. Management activities are designed to: 1) sustain a distribution of early successional habitat conditions interspersed throughout a forested landscape, 2) maintain a habitat structure which provides both horizontal and vertical diversity, 3) optimize hard and soft mast production, and 4) control access to protect habitat when necessary.

DESIRED CONDITION:

The landscape character of this area retains a natural, forested appearance. A mosaic of early successional habitat patches of various sizes are interspersed throughout a predominately forested landscape. The area also contains both forest communities greater than 100 years of age and permanent herbaceous openings providing both wildlife habitat diversity and visual diversity.

Wildlife species associated with early successional forest habitats and mixed landscapes expected to inhabit these areas include: eastern towhee, white-eyed vireo, least weasel, whip-poor-will, and orchard oriole. This management prescription also provides suitable habitat for ruffed grouse, eastern wild turkey and black bear.

The mix of forest communities varies by the landtype associations in which this prescription is allocated, however, the canopy generally consists of a mixed hardwood forest composed primarily of oaks and hickories in the uplands. Poplars, birch, and hemlock increase as moisture availability increases down slope to the coves. Southern yellow pines increase as sites become drier on south-facing slopes and towards the ridge tops. The overstory is relatively closed, multi-layered, and moderately to densely stocked. The midstory is also multi-layered composed of a diversity of shrubs, vines, grape arbors, and saplings.

8B EARLY SUCCESSIONAL HABITAT EMPHASIS

A mix of forest successional stages characterizes these areas, but the focus is on the mosaic of early successional habitat patches within a largely mid- to late-successional forest landscape. 10 - 16 % of the prescription area consists of a dispersed system of permanent openings and transitory openings created through both natural disturbance events and forest management activities. Early successional forest provides several important habitat components that change over time unless a patch is maintained every one to three years through mowing or herbicide applications. The grass-forb component, important for grazers and species that feed on insects, is created immediately following a disturbance event and quickly becomes a dense woody understory of shrubs and young trees which provides both hiding cover and soft mast for food. The forested edges created by the opening are prime hunting territory for both avian and fur-bearing predators. As the young forest matures into pole-sized trees, the dense overhead cover provides protection from flying and perching predators and shades out the dense understory increasing the visibility of approaching predators like fox and bobcats. After about 40 years, the forest begins producing hard mast like acorns and pine seeds, which are critical for the winter diet of many species in the southern Appalachians.

Early-successional habitat in the 2100 to 2500 foot elevation range for species like the golden-winged warbler, is abundant in the form of open woodlands, regenerating forests, old fields, balds, and utility rights-of-way. Many patches of these habitats are over 20 acres in size and, where compatible with other multiple-use objectives, are clustered on the landscape to provide optimum habitat for dependent species.

In addition, it is an objective to have a minimum of five percent of the area in late-successional to old growth forest conditions. Trees greater than 120 years of age may occur throughout the prescription area as individuals or small groups. Portions of this prescription area, are managed by natural processes and prescribed fire and contribute to the older aged forest component across the prescription area. These lands include riparian areas, areas of low productivity like shale barrens, and lands where commercial timber harvest is uneconomical. The resulting landscape structure of this land allocation provides a forest matrix considered marginal for linking large and medium-sized late successional to old growth patches. Cavity trees, cull trees, standing dead trees, and down logs occur throughout the area as a result of natural mortality.

Prescribed fire plays an important role in the maintenance of many of the forested communities found throughout this management prescription. Prescribed fire is frequently used to encourage oak sprouting and reduce competition from more shade tolerant species, to restore and maintain threatened and endangered species habitats, and to ensure the continued presence of fire-dependent ecosystems.

Timber management to maximize hard mast production, especially oaks, is designed to establish and maintain reproduction of a diversity of species of mast bearing age in dominant and co-dominant crown classes. Trees with open-grown crowns receiving plenty of sunlight produce the most acorns and the creation of canopy gaps large enough to get full sunlight on the forest floor helps maintain oak regeneration as well as stimulate soft mast and browse production. Maintenance of habitat diversity is critical in these areas to provide soft mast and herbaceous vegetation.

The recreation experience in this area is not considered remote. Access is provided through portions of the area on Forest Service and State roads with a gravel or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use may occasionally occur on designated trails in the area. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

Forest visitors on foot, horse, or bikes rarely experience feelings of solitude, challenge, or risk. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, encounters with

other forest visitors can be expected, however these encounters are more frequent during spring and fall hunting seasons. This area provides outstanding opportunities for wildlife viewing and hunting.

OBJECTIVES

8B-OBJ1 Maintain a minimum of 10 percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 2 acres in size and greater).

8B-OBJ2 Maintain a minimum of five percent of the area in late-successional to old growth forest conditions.

8B-OBJ3 Maintain an open road density at or below 1.5 miles per square mile (applies to National Forest System roads only).

STANDARDS

Terrestrial and Aquatic Species

8B-001 Limit creation of early-successional forest habitat to 16 percent of forested acres (based on the contiguous prescription area).

8B-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

8B-003 Favor the retention of large (>20" d.b.h.) standing snags and den trees when implementing silvicultural treatments.

Rare Communities and Old Growth

8B-004 Patches of old growth allocated to management prescriptions 6A, 6B, or 6C within an 8B management prescription block, contribute to the objective of a minimum of five percent of the area in late-successional to old growth forest conditions.

Vegetation and Forest Health

8B-005 Maintain and restore southern yellow pine forest communities through artificial or natural regeneration. Regenerate pine-hardwood forest types artificially or naturally to mixed pine-hardwood stands of native species to retain the pine component.

8B-006 Manage for a diversity of oak species to minimize yearly fluctuations in acorn supplies.

8B-007 The forest health strategy is to minimize the occurrence of pest problems by managing host-type conditions. Suppression of pests, both non-native and native, is accomplished with all available integrated pest management tools.

Timber Management

8B-008 These areas are suitable for timber production.

8B-009 Use even and uneven-aged silvicultural systems. Thinning and group selection may be employed to increase the structural diversity of the prescription area.

8B-010 Regeneration units range from 5 to 40 acres in size.

8B-011 Regeneration harvest areas are primarily coppice with reserves with 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration and two-aged silvicultural systems which leave 20-40 square feet of basal area per acre. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

8B-012 Clearcut harvest systems occur when necessary to achieve specific wildlife habitat objectives. Thinning and group selection silvicultural systems are also employed to provide the structural diversity required by some species within this habitat association.

8B-013 Regeneration harvest areas may occupy up to 20 percent of a project analysis area in order to provide 10-16 percent of the individual contiguous management prescription area in early successional forest habitat conditions and to cluster these conditions on the landscape.

8B-014 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	100-120
Cove hardwoods	80-100
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

8B-015 Salvage of dead and dying trees is allowed.

Non-timber Forest Products

8B-016 Commercial and personal use firewood collection is allowed.

Prescribed Fire and Wildland Fire Use

8B-017 Prescribed fire and wildland fire use are allowed to: create openings that stimulate soft mast production and browse; encourage oak sprouting; maintain, restore, and enhance native forest communities; ensure the continued presence of fire-dependent ecosystems; improve threatened, endangered, sensitive, and locally rare species habitat; and reduce fuel buildups. It is also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

8B-018 Wildlife openings, including linear strips, are signed to protect established vegetation from recreational use (e.g. horseback riding, mountain biking, OHV use, and camping) when a reoccurring problem exists.

8B-019 Designated OHV routes and mountain bike use may be restricted if negatively impacting nesting or brood-rearing habitat.

Scenery

8B-020 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

8C BLACK BEAR HABITAT MANAGEMENT

8.C. BLACK BEAR HABITAT MANAGEMENT

This management prescription is allocated to approximately 57,300 acres (8%) across the Jefferson National Forest. Commercial timber harvest is appropriate within this management prescription.

EMPHASIS:

This area emphasizes providing optimal habitat for black bears and other wide-ranging area sensitive species. Management activities are designed to: 1) provide a secluded and diverse habitat; 2) ensure adequate den sites, and 3) maintain hard and soft mast production.

DESIRED CONDITION:

The landscape character of this area retains a natural, forested appearance. A mid- to late-successional forest greater than 40 years of age dominates the landscape. National The area is interspersed with both forest communities greater than 100 years of age and herbaceous openings providing both wildlife habitat diversity and visual diversity.

One of the most important factors in providing optimum black bear habitat in the Southern Appalachians is road and trail management. Although roads are necessary to create and maintain habitat diversity and to effectively manage bear populations by distributing hunting pressure, less than .8 miles of open roads per 1,000 acres is desired to ensure secluded habitats. Higher densities may be accommodated if traffic volumes are low and if motorized use is restricted during spring to late summer to reduce disturbance of females with cubs. Roads management may also be used as a population regulation tool in cooperation with state wildlife management agencies. Controls on access may be tightened or loosened depending on the trend in local bear numbers, desired harvest levels, bear nuisance complaints in surrounding areas, etc.

Often, although not always, the core of these prescription areas provide semi-primitive motorized and/or non-motorized recreation opportunities. These semi-primitive opportunities are maintained within this prescription area. These core areas are currently unroaded and remain unroaded. They provide secluded habitats for black bears as well as a remote, backcountry setting for hunters and other recreationists. This prescription area is frequently connected to a backcountry recreation or wilderness area. In these situations, the adjacent prescription area is considered an important component of the black bear management unit and is used to calculate road density.

Along with black bears and bobcats, area-sensitive and other wildlife species associated with mid- to late-successional forest species expected to inhabit this area include: ovenbirds, northern saw-whet owls, cerulean warblers, wood thrushes, pileated woodpeckers, hooded warblers, scarlet tanagers, southern pigmy shrew, downy woodpecker, eastern gray squirrel, and eastern wood pee-wee. This management prescription also provides suitable habitat for eastern wild turkey.

The mix of forest communities desired varies by the landtype associations in which this prescription is allocated; however, the canopy generally consists of a mixed hardwood forest composed primarily of oaks and hickories in the uplands. Poplar, birch, and hemlock increase as moisture availability increases downslope to the coves. Southern yellow pines increase as sites become drier towards the ridge tops. The overstory is relatively closed, multi-layered, and moderately to densely stocked. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. A moderate stocking of tall trees with large diameters is desirable when cerulean warbler is known to exist

within the prescription area. The midstory is also multi-layered, composed of a diversity of shrubs, vines, grape arbors, and saplings. A dense shrub understory is maintained or enhanced where hooded warblers are known to exist.

A mix of forest successional stages characterizes these areas, but the focus is on oaks and hickories in their prime mast-producing years, between 40 and 100 years of age. A minimum of sixty percent of forest communities in these prime mast-producing years is desirable. There is also an objective to have a minimum of twenty-five percent of the area in late-successional to old growth forest conditions. These conditions are frequently provided within the semi-primitive portions of this prescription area, as well as the adjoining backcountry or wilderness and embedded old growth land allocations. Trees greater that 120 years of age occur commonly as individuals, groups, or large areas.

In addition, 4-10 percent of forested land outside of the semi-primitive core areas is in early successional forest conditions in order to ensure a steady supply of hard mast in the most productive age classes and ensure that oaks and other nut-producing trees are dominant components of the future forest. Early successional areas also establish and maintain a diversity of soft mast producing species so that berries and fruits are available in all seasons. Soft mast can mitigate the impacts of years when hard mast is low.

Rockfalls, caves, road culverts, uprooted trees, and trees larger than 22 inches in diameter serve as potential dens. Known den trees are retained in harvest areas along with an unharvested buffer of at least 100 feet wide on all sides of the den. An extended rotation age on lands suitable for commercial timber harvest provides future den trees over the long term by allowing potential den trees to reach suitable size.

Portions of this prescription area are managed by natural processes and prescribed fire and contribute to the older aged forest component across the prescription area. These lands include semi-primitive core areas, riparian areas, areas of low productivity like shale barrens, and lands where commercial timber harvest is uneconomical. The resulting landscape structure of this land allocation provides a forest matrix appropriate for linking large and medium-sized late successional to old growth patches. The semi-primitive core areas provide large-sized late successional to old growth patches in the future. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Prescribed fire plays an important role in the maintenance of many of the forested communities found throughout this management prescription. Prescribed fire is frequently used to encourage oak sprouting and reduce competition from more shade tolerant species, to restore and maintain threatened and endangered species habitats, and to ensure the continued presence of fire-dependent ecosystems. Prescribed fire and timber management are employed to maintain the hard mast producing capabilities of the forest communities containing oaks and hickories.

Timber management to maximize hard mast production, especially oaks, is designed to establish and maintain reproduction of a diversity of species of mast-bearing age in dominant and co-dominant crown classes. Trees with open-grown crowns receiving plenty of sunlight produce the most acorns and the creation of canopy gaps large enough to get full sunlight on the forest floor helps maintain oak regeneration as well as stimulate soft mast and browse production. Regeneration areas have irregular shapes and are dispersed throughout the portions of this prescription area outside of the semi-primitive core area. Thinning is used to increase structural diversity, favor oak species, restore open oak woodland conditions, and extend soft mast production.

The recreation experience in portions of these areas may be considered remote. Open road densities throughout these areas are low (< .8 miles per 1000 acres). Access is provided through portions of these areas on Forest Service and State roads with a gravel

or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use is prohibited in order to provide wildlife habitat security. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

Forest visitors on foot, horse, or bikes may experience solitude in portions of these prescription areas and feelings of challenge and risk are expected. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, occasional encounters with other forest visitors can be expected; however these encounters are more frequent during spring and fall hunting seasons. This area provides good opportunities for wildlife viewing and hunting.

OBJECTIVES

8C-OBJ1 Maintain a minimum of sixty percent of the area between 40-100 years of age.

8C-OBJ2 Maintain a minimum of twenty-five percent of the area in late-successional to old growth forest conditions. Calculations of late-successional to old growth forest conditions include embedded old growth and adjacent backcountry and wilderness areas.

8C-OBJ3 Maintain a minimum of 4 percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 2 acres in size and greater).

8C-OBJ4 Maintain an open road density at or below .8 miles per square mile (applies to National Forest System roads only).

STANDARDS

Terrestrial and Aquatic Species

8C-001 Limit creation of early successional forest habitat to 10 percent of forested acres outside of semi-primitive core areas (based on the contiguous prescription area).

8C-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur within and outside semi-primitive core areas. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

8C-003 Favor the retention of large (>20" d.b.h.) standing snags and den trees when implementing silvicultural treatments. Known den trees are retained in harvest areas along with an unharvested buffer of at least 100 feet wide on all sides of the den.

Rare Communities and Old Growth

8C-004 Patches of old growth allocated to management prescriptions 6A, 6B, 6C, or 12B within an 8.C management prescription block contribute to the objective of a minimum of twenty-five percent of the area in late-successional to old growth forest conditions.

Vegetation and Forest Health

8C-005 Maintain and restore southern yellow pine communities through artificial or natural regeneration. Regenerate pine-hardwood forest types artificially or

naturally to mixed pine-hardwood stands of native species to retain the pine component.

8C-006 Manage for a diversity of oak species to minimize yearly fluctuations in acorn supplies.

8C-007 The forest health strategy is to minimize the occurrence of pest problems by managing host-type conditions. Suppression of pests, both non-native and native, is accomplished with all available integrated pest management tools.

Timber Management

8C-008 These areas are suitable for timber production.

8C-009 Use even and uneven-aged silvicultural systems. Uneven-aged forest management (e.g. group selection, individual tree selection) practices are designed to result in forest structure and composition consistent with late-successional deciduous forest habitats over the long-term.

8C-010 Regeneration harvest areas range in size from 2 to 40 acres.

8C-011 Primary regeneration harvest method is coppice with reserves with 15-25 square feet of basal area left to ensure adequate sunlight for oak regeneration and two-aged silvicultural systems, which leave 20-40 square feet of basal area per acre. In order to provide vertical diversity and future mast production, leave trees with a mean diameter of the codominant trees in the stand.

8C-012 Clearcut harvest systems may occur when necessary to achieve specific wildlife habitat objectives. Thinning and group selection silvicultural systems are also employed to provide the structural diversity required by some species within this habitat association.

8C-013 Regeneration harvest areas may occupy up to 10 percent of a project analysis area in order to provide up to 4 percent of the individual contiguous management prescription area in early successional forest habitat conditions and to cluster these conditions on the landscape.

8C-014 Regenerate pine forest types artificially or naturally to native pine species that commonly occur within the same land type association. Regenerate pine-hardwood forest types artificially or naturally to mixed pine-hardwood stands of native species that commonly occur within the same land type association.

8C-015 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Non-timber Forest Products

8C-016 Commercial and personal use firewood collecting is allowed.

Prescribed Fire and Wildland Fire Use

8C-017 Prescribed fire and wildland fire use are allowed to: create openings that stimulate soft mast production and browse; encourage oak sprouting; maintain, restore, and enhance native forest communities; ensure the continued presence of fire-dependent ecosystems; improve threatened,

endangered, sensitive, and locally rare species habitat; and reduce fuel buildups. It is also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

8C-018 Wildlife openings, including linear strips, are signed to protect established vegetation from recreational use (e.g. horseback riding, mountain biking, OHV use, and camping) when a reoccurring problem exists.

8C-019 These areas are unsuitable for designation of new OHV routes or ATV use areas, unless crossing the area is the only feasible alternative or results in less environmental impact.

8C-020 Mountain bike use may be restricted if negatively impacting denning habitat.

Scenery

8C-021 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	L	L	L

8C-022 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive motorized and non-motorized areas within this prescription area.

8C-023 Clustering of early successional habitats occurs primarily within scenic classes 3 through 7.

Minerals

8C-024 These areas are available for federal oil and gas leasing with controlled surface use to protect the semi-primitive core areas. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on black bear and semi-primitive recreation opportunities.

8C-025 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect the semi-primitive core areas.

Roads

8C-026 Road construction, reconstruction, and decommissioning are informed by a watershed-scale or site-specific road analysis.

8C-027 Do not increase current open system road density levels calculated across each prescription block.

Lands and Special Uses

8C-028 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Continue existing uses.

8E1 RUFFED GROUSE/WOODCOCK HABITAT EMPHASIS

This management prescription is allocated to approximately 16,100 acres (2%) across the Forest.

EMPHASIS:

This area emphasizes providing optimal habitat for the ruffed grouse, an economically important small game bird that has experienced population declines throughout its range. Management activities are designed to: 1) sustain a distribution of early successional habitat conditions interspersed throughout a forested landscape; 2) provide dense stands of saplings in the 5-20 year age group for hiding and thermal cover; 3) provide regenerating stands 3-7 years of age that still have a significant herbaceous component along creek bottoms, damp swales, and lower north or east slopes for brood habitat; 4) optimize hard and soft mast production; 5) provide drumming platforms; and 6) control access during critical nesting and brood-rearing seasons.

DESIRED CONDITION:

The landscape character of this area retains a natural, forested appearance. A mosaic of early successional habitat patches of various sizes are interspersed throughout a predominately forested landscape. The area also contains both forest communities greater than 100 years of age and permanent herbaceous openings providing both wildlife habitat diversity and visual diversity.

Although this management prescription is specifically designed for optimum ruffed grouse and woodcock habitat, other wildlife species associated with early successional forest habitats and mixed landscapes expected to inhabit these areas include: eastern towhee, white-eyed vireo, least weasel, whip-poor-will, and orchard oriole. Riparian areas found within this management prescription provide suitable habitat for early successional riparian species like the star-nosed mole, eastern ribbon snake, and golden-banded skipper. At higher elevations optimum habitat for golden-winged warbler and chestnut-sided warbler is also provided. This management prescription also provides suitable habitat for eastern wild turkey and black bear.

The mix of forest communities desired varies by the landtype associations in which this prescription is allocated; however, the canopy generally consists of a mixed hardwood forest composed primarily of oaks and hickories in the uplands interspersed with pockets of white pine. Poplar, birch, and hemlock increase as moisture availability increases downslope to the coves. Southern yellow pines increase as sites become drier towards the ridge tops and on southern-faced slopes. The overstory is relatively closed, multi-layered, and moderately to densely stocked. The midstory is also multi-layered, composed of a diversity of shrubs, vines, grape arbors, and saplings.

A mix of forest successional stage characterizes these areas, but the focus is on the mosaic of early successional habitat patches within a largely forested landscape. Ten - 16 % of the prescription area consists of a dispersed system of permanent openings and transitory openings created through both natural disturbance events and forest management activities. Early successional forest provides several important habitat components that change over time unless a patch is maintained every one to three years through mowing or herbicide applications. Timber management in these areas is designed to provide transitional early successional habitat over time, as well as a full spectrum of age classes between the early- and late-successional stages. Scattered small patches of early successional forest habitat within the riparian corridor are important for woodcock because grassy and thicket areas near water provide prime nesting and display grounds.

8E1 RUFFED GROUSE / WOODCOCK HABITAT EMPHASIS

The grass-forb component, important for grazers and species that feed on insects, is created immediately following a disturbance event and quickly becomes a dense herbaceous understory of shrubs and young trees which provides both hiding cover and soft mast for food. The forested edges created by the opening are prime hunting territory for both avian and fur-bearing predators. As the young forest matures into pole-sized trees, the dense overhead cover provides protection from flying and perching predators and shades out the dense understory, increasing the visibility of approaching predators like fox and bobcats. After about 40 years, the forest begins producing hard mast like acorns and pine seeds, which are critical for the winter diet of many species in the southern Appalachians.

In addition, it is an objective to have a minimum of ten percent of the area in late-successional to old growth forest conditions. Trees greater than 120 years of age may occur throughout the prescription area as individuals or small groups. Portions of this prescription area are managed by natural processes and prescribed fire and contribute to the older aged forest component across the prescription area. These lands include riparian areas, areas of low productivity like shale barrens, and lands where commercial timber harvest is uneconomical. The resulting landscape structure of this land allocation provides a forest matrix considered marginal for linking large and medium-sized late successional to old growth patches. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Prescribed fire plays an important role in the maintenance of many of the forested communities found throughout this management prescription. Prescribed fire is frequently used to encourage oak sprouting and reduce competition from more shade tolerant species, to restore and maintain threatened and endangered species habitats, and to ensure the continued presence of fire-dependent southern yellow pine ecosystems. Prescribed fire and commercial timber harvest are employed to maintain the hard mast-producing capabilities of the forest communities containing oaks and hickories.

The recreation experience in this area is not considered remote, although open road densities may be fairly low. Access is provided through portions of the area on Forest Service and State roads with a gravel or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use may occasionally occur on designated trails in the area, but is generally discouraged to provide wildlife habitat security. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

Forest visitors on foot, horse, or bikes rarely experience feelings of solitude, challenge, or risk. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, encounters with other forest visitors can be expected; however these encounters are more frequent during spring and fall hunting seasons. This area provides outstanding opportunities for wildlife viewing and hunting.

OBJECTIVES

8E1-OBJ1 Maintain a minimum of ten percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 5 acres in size and greater).

8E1-OBJ2 Maintain a minimum of ten percent of the area in late-successional to old growth forest conditions greater than 100 years of age.

8E1-OBJ3 Maintain up to 2 percent of the riparian corridor (Management Prescription 11 located within Management Prescription 8E1) in early successional forest habitat conditions in openings 2 to 5 acres in size.

8E1-OBJ4 Maintain an open road density at or below 1.5 miles per square mile (applies to National Forest System roads only).

STANDARDS

Water, Soil, and Air

8E1-001 Early successional habitat openings are a minimum of 25 feet from perennial streambanks.

8E1-002 Early successional habitat openings larger than 5 acres may extend into the adjacent upland areas, as long as the opening area within the riparian corridor (Management Prescription 11) is not greater than 5 acres in size.

Rare Communities and Old Growth

8E1-003 Patches of old growth allocated to management prescriptions 6A, 6B, or 6C within an 8E1 management prescription block contribute to the objective of a minimum of ten percent of the area in late-successional to old growth forest conditions.

Terrestrial and Aquatic Species

8E1-004 Retain an average of one large (>12" d.b.h.) down trees per acre as drumming logs.

8E1-005 Maintain or increase pine stands to provide winter thermal cover.

8E1-006 Limit creation of early successional forest habitat to 16 percent of forested acres (based on the contiguous prescription area).

8E1-007 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur; however, transitional openings that move through the dense pole stage are preferred over permanent wildlife openings. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Vegetation and Forest Health

8E1-008 Retain patches of coniferous cover during site preparation and timber stand improvement activities when consistent with overall regeneration and species composition objectives.

8E1-009 To achieve the structural habitat conditions for ruffed grouse, retain <20 square feet of residual basal area per acre in harvest units, favoring oaks of mast-producing size as residuals.

8E1-010 Retain high stem density evergreen shrub thickets on at least 5-10% of the area to provide cover for adult ruffed grouse.

8E1-011 Maintain mature/immature oak "edges" with high stem density for grouse.

8E1-012 Maintain brushy edge around permanent wildlife openings for grouse. Encourage or plant soft mast-producing species in this zone.

8E1-013 Regenerate pine forest types artificially or naturally to native pine species that commonly occur within the same land type association. Regenerate pine-hardwood forest types artificially or naturally to mixed pine-hardwood stands of native species that commonly occur within the same land type association.

8E1 RUFFED GROUSE / WOODCOCK HABITAT EMPHASIS

8E1-014 Manage for a diversity of oak species to minimize yearly fluctuations in acorn supplies.

8E1-015 The forest health strategy is to minimize the occurrence of pest problems by managing host-type conditions. Suppression of pests, both non-native and native, is accomplished with all available integrated pest management tools.

Timber Management

8E1-016 These areas are suitable for timber production.

8E1-017 Primary regeneration harvest method is clearcutting (with 6 reserve trees per acre for potential Indiana bat roost trees). Coppice with reserve harvests may be used where scenery concerns override habitat needs.

8E1-018 Regeneration units range from 5 to 20 acres in size, the optimum size of clearcuts for ruffed grouse.

8E1-019 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	80-100
Cove hardwoods	70-90
White pine	60-80
Yellow pine	60-80
Scarlet oak/Black oak	60-80

Prescribed Fire and Wildland Fire Use

8E1-020 Prescribed fire and wildland fire use are allowed to: create a mosaic of early successional habitat patches; create openings that stimulate soft mast production and browse; encourage oak sprouting; maintain, restore, and enhance native forest communities; ensure the continued presence of fire-dependent ecosystems; improve threatened, endangered, sensitive, and locally rare species habitat; and reduce fuel buildups. It is also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

8E1-021 Wildlife openings, including linear strips, are signed to protect established vegetation from recreational use (e.g. horseback riding, mountain biking, OHV use, and camping) when a reoccurring problem exists.

8E1-022 Designated OHV routes and mountain bike use may be restricted if negatively impacting nesting or brood-rearing habitat.

Scenery

8E1-023 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

8.E.2 PEAKS OF OTTER SALAMANDER HABITAT CONSERVATION AREAS

8E2 PEAKS OF OTTER SALAMANDER HABITAT CONSERVATION AREAS

This management prescription is allocated to approximately 7,700 acres (1%) on the Glenwood Ranger District; divided into a primary habitat conservation area (2,400 acres) unsuitable for timber production and a secondary habitat conservation area (5,300 acres) suitable for timber production. The Peaks of Otter salamander (*Plethodon hubrichti*) is a USDI Fish and Wildlife Service and Commonwealth of Virginia "species of special concern" and a Forest Service "sensitive" species. The worldwide range of this species is restricted to Virginia in the counties of Bedford, Botetourt, and Rockbridge, primarily on lands of the Jefferson National Forest and the Blue Ridge Parkway.

The entire Peaks of Otter salamander Habitat Conservation Area is approximately 20,700 acres and includes Blue Ridge Parkway lands, as well as management prescription 1A, 4A, 4K1, 5B, and 12A (See Figure 3.2). This desired condition and standards are incorporated into these other prescriptions.

8E2a Peaks of Otter Salamander Primary Habitat Conservation Area

8E2a PEAKS OF OTTER SALAMANDER PRIMARY HABITAT CONSERVATION AREA

EMPHASIS:

Management of these lands emphasizes maintaining and enhancing Peaks of Otter salamander habitat to assure its continued survival and reproduction on the Jefferson National Forest. Management is in accordance with the guidelines of the *Habitat Conservation Agreement for the Peaks of Otter Salamander* (August 26, 1997) between the USDA Forest Service, the USDI Park Service, and the USDI Fish and Wildlife Service. Connectivity of unaltered or enhanced habitat for the Peaks of Otter salamander is emphasized.

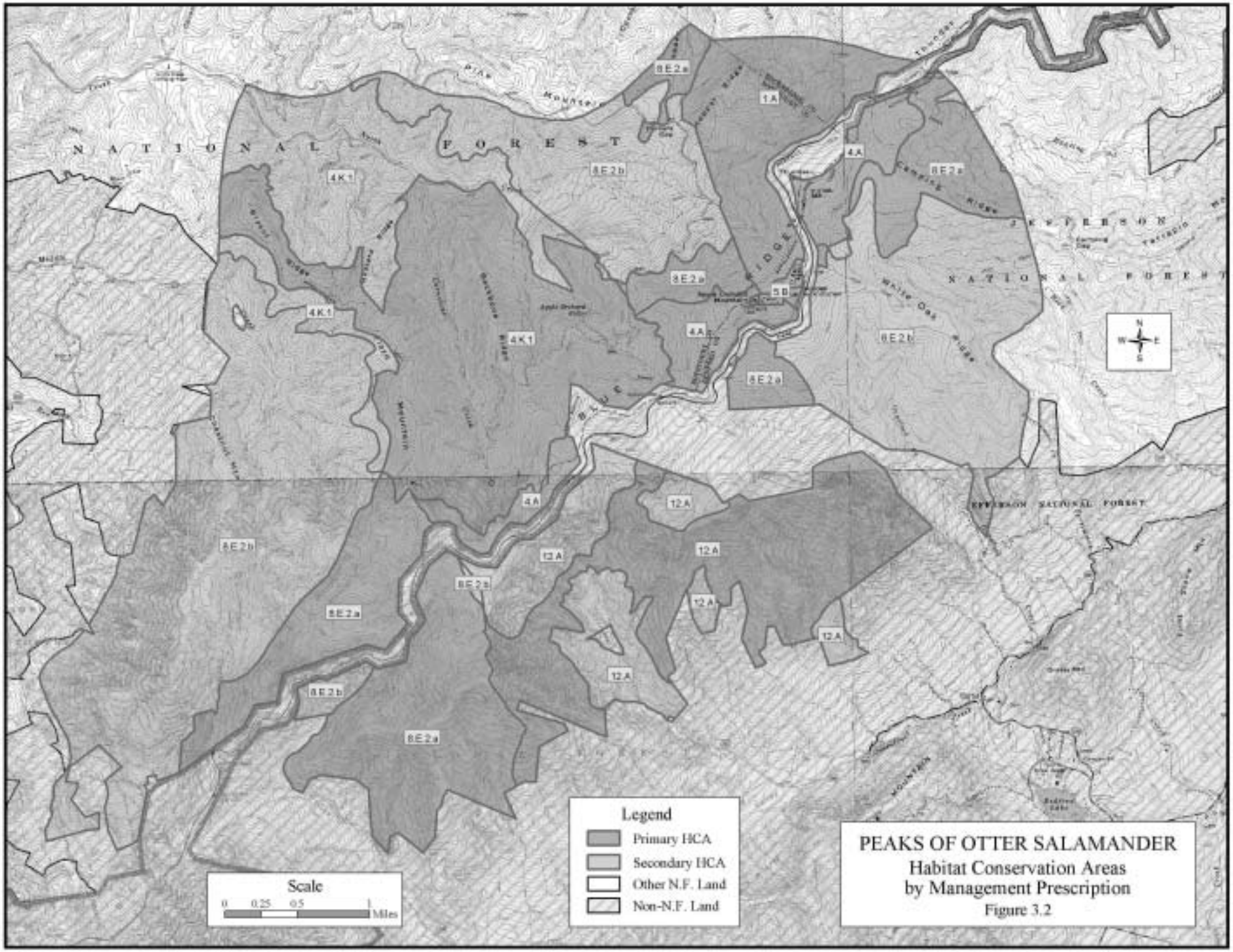
Throughout this chapter, management prescriptions which encompass the Peaks of Otter salamander habitat conservation area reference the desired condition and standards in this management prescription (8E2). 8E2 includes both primary (8E2a) and secondary (8E2b) habitat conservation areas and the applicable standards will be followed. (See Figure 3.2)

DESIRED CONDITION:

Within this area, habitats are managed to maintain or enhance Peaks of Otter salamander populations. The landscape character of this area consists of a closed forest canopy of late-successional stages of oak, poplar, and maple woodlands, hardwoods mixed with eastern hemlock, hemlock forests, and rhododendron thickets. Cool, moist habitats with abundant ground cover in the form of rocks, down and decaying logs, and leaf litter are maintained and restored. Open grassy areas and areas without vegetation, like roads, trails, and utility rights-of-way are minimized. Soils are deep, uncompacted, and high in organic matter allowing opportunities for the salamanders to burrow into the soil for protection from the elements. Salamander food items such as small insects, spiders, earthworms, and other small invertebrates are plentiful.

The landscapes of the Peaks of Otter Salamander primary habitat conservation area retain a natural, forested appearance. A regionally distinctive landscape features rock outcroppings, waterfalls, cascading mountain streams, and a structurally diverse mid- to late-successional forest community with a continuous forested canopy. The valued character of the natural evolving landscape is intact. There are no noticeable deviations.

The mix of forest communities vary by landtype association, including mixed mesophytic and mesic oak hickory forests dominated by red, white, chestnut, and black oaks, as well as tulip poplar, sugar and red maples, and hemlocks. The overstory is primarily closed with minimal sunlight reaching the forest floor; however, naturally occurring brushy and herbaceous openings may occasionally be found. Overstory stocking ranges from 80-140



PEAKS OF OTTER SALAMANDER
Habitat Conservation Areas
by Management Prescription
Figure 3.2

square feet of basal area per acre or higher. The mid-story is multi-layered and composed of a diversity of shrubs, vines, grape arbors, and saplings. The forest floor contains an abundance of shade-loving herbaceous plants, which provide foraging sites for the Peaks of Otter salamander. Natural processes eventually result in a large patch old growth forest matrix throughout much of the area. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the entire area as a result of natural mortality. All forested blocks are interconnected by corridors which themselves have a continuous forest canopy.

Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides optimal to suitable habitat for black bear and other mid- to late-successional species including Peaks of Otter salamander, southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk.

This primary habitat conservation area is unsuitable for timber production and commercial timber harvest. Removal of non-native vegetation and species limiting growth of hardwoods is considered appropriate. Sufficient canopy trees and large woody debris on the forest floor are maintained to reduce drying of subsurface soils. Biological pesticide controls of gypsy moth, hemlock woolly adelgid, and other detrimental species are permitted with full consideration of the effects on the salamanders, their microhabitat, and their prey.

The role of fire in maintaining some natural communities within this area is recognized as an important management tool. Management may include the use of prescribed fire on dry sites supporting rare plants and unique natural communities, accompanied by studies of the effects of this activity on salamander populations. Wildland fires are usually contained or controlled, although heavy equipment use is minimized within the prescription area.

Low-impact (dispersed) recreational uses of the Peaks of Otter area are compatible with the long-term conservation of the Peaks of Otter salamander. These include hiking, hunting, backpacking, picnicking, photography, and wildlife study. Existing trails and roads are used for access to specified areas for these activities, although decommissioning of existing roads may occur. Mountain bike and horse riding occur only on designated roads and trails. Off-road vehicle use is prohibited. Educational materials describing the Peaks of Otter salamander, its unique geographical distribution, its habitat, fragility, and conservation efforts are readily available to visitors of the area. The Peaks of Otter salamander is actively protected against collection and killing, except for specified scientific purposes.

Limited access is provided through portions of the area on Forest Service and State roads with gravel, native, and occasionally paved surfaces. The opportunity to encounter other visitors is high along the Parkway and at parking areas, pull-outs, and overlooks. Forest visitors on foot, horse, or bicycles experience solitude in portions of this prescription area away from the Blue Ridge Parkway. Comfort, sanitation, and camping facilities on Forest Service lands are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, occasional encounters with other forest visitors can be expected, however these encounters are more frequent during spring and fall hunting seasons.

Management activities limit negative impacts of fragmentation, isolation, and edge effects (such as drying from decreased insulation, impacts from edge predators, invasion of non-native invasive plants, and increased competition from other salamander species). No new permanent roads are constructed. New trail and temporary road construction only occurs when it is necessary to provide access to areas outside the primary habitat

8E2a PEAKS OF OTTER SALAMANDER PRIMARY HABITAT CONSERVATION AREA

conservation area that could not otherwise be accessed. Restoration of canopy and cover along temporary and decommissioned roads occurs quickly. Canopy closure along road rights-of-way is common. Trail and road reconstruction, minor relocation, and new parking facilities are permitted. All activities are conducted with full consideration of effects on Peaks of Otter salamander populations.

8E2b PEAKS OF OTTER SALAMANDER SECONDARY HABITAT CONSERVATION AREA

The foreground the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes when compatible with conservation of Peaks of Otter salamander populations. Activities within the Appalachian Trail foreground are planned and carried out in cooperation with appropriate Appalachian Trail management partner(s).

8E2b Peaks of Otter Salamander Secondary Conservation Area

EMPHASIS:

Management of these lands emphasize maintaining Peaks of Otter salamander habitat to assure its continued existence on the Jefferson National Forest while also providing wildlife habitat for other species and taking a more active role in maintaining and enhancing the health of oak and mixed oak forest communities through vegetation management. Research and monitoring to determine the effects of multiple use management activities on the Peaks of Otter salamander are an important component of this prescription. Management is in accordance with the guidelines of the *Habitat Conservation Agreement for the Peaks of Otter Salamander* (August 26, 1997) between the USDA Forest Service, the USDI Park Service, and the USDI Fish and Wildlife Service.

DESIRED CONDITION:

Within this area, habitats are managed to maintain or enhance Peaks of Otter salamander populations while also providing habitat for other mid-to-late successional forest species and maintaining forest health and vigor. The landscape character of this area consists of mid- to late-successional forest communities of oak, hickory, and tulip poplar woodlands, hardwoods mixed with eastern hemlock, hemlock forests, and rhododendron thickets. Newly regenerated and younger aged forest stands are found dispersed throughout the area. Cool, moist habitats with abundant ground cover in the form of rocks, down and decaying logs, and leaf litter are maintained and restored. Areas without vegetation, like roads, trails, and utility rights-of-way are minimized. Soils are deep, uncompacted, and high in organic matter allowing opportunities for the salamanders to burrow into the soil for protection from the elements. Salamander food items such as small insects, spiders, earthworms, and other small invertebrates are plentiful.

Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides optimal to suitable habitat for black bear and other mid- to late-successional species including Peaks of Otter salamander, southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk. The presence of small amounts of varied successional stages also provide habitat for such species as eastern towhee, regal fritillary, white-eyed vireo, wild turkey, whitetail deer, ruffed grouse. Existing open, brushy or herbaceous areas are maintained in the secondary habitat conservation area, providing both visual and habitat diversity.

8E2b PEAKS OF OTTER SALAMANDER SECONDARY HABITAT CONSERVATION AREA

The landscapes of the Peaks of Otter Salamander secondary habitat conservation area retain a natural, forested appearance. A regionally distinctive landscape features rock outcroppings, waterfalls, cascading mountain streams, and a structurally diverse mid- to late-successional forest community with a continuous forested canopy, with the exception of occasional pastoral and historic/cultural enclaves. The valued character of the natural appearing and cultural landscapes either appears intact or is actually intact. There are no noticeable deviations.

The mix of forest communities desired varies by the landtype associations contained within this prescription; however, emphasis is on the mixed mesophytic and mesic oak hickory forest communities dominated by red, white, chestnut, and black oaks, as well as tulip poplar and hemlocks. Overstory stocking ranges from 50 to 140 square feet of basal area per acre or higher, with overstory removal occurring only after a new age class which forms a continuous canopy is established in order to maintain shade on the forest floor. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities may be enhanced through commercial and non-commercial vegetation management activities. No more than 4% of the prescription area contains early seral habitat in the 0-10 year old age class. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the entire area as a result of natural mortality. All forested blocks are interconnected by corridors which themselves have a continuous forest canopy.

The role of fire in maintaining some natural communities within this area is recognized as an important management tool. Management may include the use of prescribed fire on dry sites supporting rare plants and unique natural communities, accompanied by studies of the effects of this activity on salamander populations. Wildland fires are usually contained or controlled, although heavy equipment use is minimized within the prescription area.

Low-impact (dispersed) recreational uses of the Peaks of Otter area are compatible with the long-term conservation of the Peaks of Otter salamander. These include hiking, hunting, backpacking, picnicking, photography, and wildlife study. Existing trails and roads are used for access to specified areas for these activities, although decommissioning of existing roads may occur. Mountain bike and horse riding occur only on designated roads and trails. Off-road vehicle use is prohibited. Educational materials describing the Peaks of Otter salamander, its unique geographical distribution, its habitat, fragility, and conservation efforts are readily available to visitors of the area. The Peaks of Otter salamander is actively protected against collection and killing, except for specified scientific purposes.

Limited access is provided through portions of the area on Forest Service and State roads with gravel, native, and occasionally paved surfaces. The opportunity to encounter other visitors is high along the Parkway and at parking areas, pullouts, and overlooks. Forest visitors on foot, horse, or bicycles experience solitude in portions of this prescription area away from the Blue Ridge Parkway. Comfort, sanitation, and camping facilities on national forest system lands are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, occasional encounters with other forest visitors can be expected, however these encounters are more frequent during spring and fall hunting seasons.

Management activities limit negative impacts of fragmentation, isolation, and edge effects (such as drying from decreased insulation, impacts from edge predators, invasion of non-native invasive plants, and increased competition from other salamander species). No new permanent roads are constructed. New trail and temporary road construction are permitted. Restoration of canopy and cover along temporary and decommissioned roads occurs quickly. Canopy closure along road rights-of-way is common. Trail and road reconstruction, minor relocation, and new parking facilities are permitted. Mineral activities associated with reserved and outstanding mineral rights may be observed.

8E2b Peaks of Otter Salamander Secondary Habitat Conservation Area

However, leasable mineral activities and use of mineral materials are not be apparent within the area. All activities are conducted with full consideration of effects on Peaks of Otter salamander populations.

The foreground the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes when compatible with conservation of Peaks of Otter salamander populations. Activities within the Appalachian Trail foreground are planned and carried out in cooperation with appropriate Appalachian Trail management partner(s).

Standards

The following standards are also applicable to Management Prescriptions 4A, 4K, 6A, 6C, 7F, and 12A within the Peaks of Otter salamander habitat conservation area on the Glenwood Ranger District.

These standards are applicable to both the primary (8E2a.) and secondary (8E2b.) habitat conservation area unless otherwise indicated.

Terrestrial and Aquatic Species

8E2-001 Management for other plant and animal species is evaluated during project level analysis to determine the direct, indirect, and cumulative effects on Peaks of Otter salamander and its habitat.

8E2-002 Existing wildlife openings can be maintained through mowing or burning. They are monitored to assess their effects on Peaks of Otter salamander populations. New wildlife openings and ponds are not allowed within the primary habitat conservation area.

8E2-003 Wildlife habitat improvements focus on the needs of the Peaks of Otter salamander and area sensitive mid- to late-successional habitat associates, limiting fragmented, isolated, and edge habitats. Early successional habitat conditions may be created within the **secondary habitat conservation area following the applicable standards under timber management**. Creation of early successional habitat within the **primary habitat conservation area** is prohibited.

8E2-004 Structural habitat improvements for fish and other aquatic species are allowed.

Threatened, Endangered, and Sensitive Species

8E2-005 Conflicts between Peaks of Otter salamander habitat management and other threatened, endangered, or sensitive species are evaluated on a case-by-case basis in consultation with USDI Fish and Wildlife Service.

8E2-006 Translocation, repatriation, and relocation of any Peaks of Otter salamander will not occur.

Rare Communities and Old Growth

8E2-007 Maintain rare communities in both the **primary and secondary habitat conservation areas**.

8E2-008 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

8E2-009 Allow vegetation management activities within the **primary habitat conservation area** only to:

- Maintain or enhance Peaks of Otter salamander populations;
- Control non-native vegetation and species limiting the growth of hardwoods;
- Control or suppress gypsy moth, hemlock woolly adelgid, and other detrimental species, using integrated pest management techniques.
- Maintain rare plants and communities on dry sites;
- Reduce fuel hazard; or
- Maintain roads and trails.

8E2-010 Allow vegetation management activities within the **secondary habitat conservation area** to:

- Maintain or enhance Peaks of Otter salamander populations;
- Control non-native vegetation and species limiting the growth of hardwoods;
- Control or suppress gypsy moth, hemlock woolly adelgid, and other detrimental species, using integrated pest management techniques.
- Maintain rare plants and communities on dry sites;
- Provide habitat for mid- to late-successional wildlife species;
- Maintain forest health and vigor;
- Promote highly productive hardwood forests with closed canopies in stands that have not yet achieved these desired habitat conditions or where disturbances like gypsy moth have significantly altered stand conditions;
- Reduce fuel hazard; or
- Maintain roads and trails.

8E2-011 Vegetation management activities maintain sufficient canopy trees and large woody debris on the forest floor to reduce drying of subsurface soils.

8E2-012 Herbicides may be used to control or eliminate non-native and invasive plant species that are inconsistent with the long-term protection of Peaks of Otter salamander habitat. Use selective herbicide applications as opposed to broadcast treatments. Aerial spraying is not permitted.

8E2-013 Biological pesticide controls of gypsy moth, hemlock woolly adelgid, and other detrimental species are permitted with full consideration of the effects on the salamanders, their microhabitat, and their prey. Non-target species-specific chemical insecticides are not permitted.

8E2-014 A combination of timber harvest and biological pesticide controls may be implemented in the **secondary conservation area** to aid in the study of effects of non-native pests on the Peaks of Otter salamander.

8E2-015 Natural enemies of target pests should only be introduced once it has been determined that the introduced species will not negatively impact either the salamander directly, or the salamander's primary prey base (primarily ants and the insect order Collembola).

8E2 PEAKS OF OTTER SALAMANDER HABITAT CONSERVATION AREAS

Timber Management

8E2-016 The **primary habitat conservation area** is not suitable for timber production. Commercial timber harvest is not allowed.

8E2-017 The **secondary habitat protection area** is suitable for timber production. The remainder of the standards under this section refers only to the secondary habitat protection area.

8E2-018 Clearcutting is not allowed.

8E2-019 Leave at least 50 square feet of live basal area per acre evenly distributed over the harvest area.

8E2-020 The second entry will not occur until at least fifteen years after the initial harvest entry. Twenty years is preferable.

8E2-021 Harvest units will not be laid out immediately adjacent to areas known to have low Peaks of Otter salamander population densities (e.g., old clearcuts or shelterwood cuts with less than 50 square feet of basal area). Leave unmanaged timber surrounding these old harvest areas until such time as they have matured to the point that they display the characteristics of shading, moisture, and large woody debris that constitute good Peaks of Otter salamander habitat and support salamander populations similar to those found in adjacent mature stands. Harvest units may touch one another tangentially, but will not share a common boundary.

8E2-022 No more than 100 acres are harvested per year (averaged over a five year period) within the prescription area. This includes salvage sales.

8E2-023 Within harvest units:

- Retain at least 15 pieces (average) of large woody debris per acre, having a minimum small end diameter of 8 inches and a minimum length of 10 feet.
- Treetops are lopped and left where the tree was felled. Minimum diameter of logs for removal is 8 inches at the small end.
- Leave 5-15 standing dead trees per acre to provide a supply of future large woody debris, unless this would constitute a safety hazard. The number left will depend on what is available on the site. As a general guideline:
- Leave 10-15 trees per acre when the average leave tree diameter breast height is 8-16 inches;
- Leave 5-10 trees per acre when the average leave tree diameter breast height is 16-24 inches;
- Leave 5 trees per acre when the average leave tree diameter breast height is 24 inches or greater.

8E2-024 Salvage sales will leave all green trees up to 50 square feet of basal area per acre, if available. Green trees in excess of 50 square feet per acre of basal area may be cut and removed if necessary to meet stand objectives through a shelterwood treatment method.

8E2-025 Timber harvest operations are suspended from April 15 to July 1 and from September 15 to November 1 to the maximum extent possible. These time periods correspond with the greatest amount of surface activity of the Peaks of Otter salamander.

8E2-026 Monitoring is conducted to determine that the objectives of maintaining Peaks of Otter salamander populations are being met. Monitoring to determine population recovery in harvested stands will follow the protocol being developed by the Declining Amphibian Populations Task Force, which

may be altered by the joint concurrence of the Forest Service, Blue Ridge Parkway, and Fish and Wildlife Service. Studies will continue to gather information on how long it takes for Peaks of Otter salamander populations to return to densities equivalent to those in adjacent mature stands. This information will help to modify management practices, if necessary.

8E2-027 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Non-Timber Forest Products

8E2-028 Personal use cutting of dead and down firewood is permitted within 100 feet of roads.

Wildland Fire Suppression

8E2-029 Ensure firefighter and public safety as the first priority. Secondly, protect property and natural and cultural resources based on the relative values to be protected. Wildland fire response is suppression with initial attack to minimize acreage burned. Suppression strategies will strive to minimize soil disturbance, as well as canopy and cover loss.

8E2-030 Minimize the use of soil-disturbing mechanized equipment when suppression can be achieved with other methods. Avoid moist habitats during line construction when fire conditions allow.

8E2-031 Rehabilitate all firelines as quickly as possible through reseeding and dragging cover objects into the line.

Prescribed Fire and Wildland Fire Use

8E2-032 Prescribed fires are permitted predominately on drier sites supporting rare plants or unique natural communities. Prescription for fire will ensure low mortality of canopy vegetation and low risk of escape. Stand replacing prescribed fires are not allowed.

8E2-033 Monitor effects of prescribed fire on Peaks of Otter salamander populations following prescribed fires.

8E2-034 When their use cannot be avoided, locate disked/bladed/plowed firelines outside of moist habitats.

8E2-035 Rehabilitate all firelines as quickly as possible through reseeding and dragging cover objects into the line.

Recreation

8E2-036 New developed recreation facilities are not allowed.

8E2-037 Informational kiosks describing the Peaks of Otter salamander, its unique geographical distribution, its habitat, fragility, and conservation efforts are encouraged.

8E2-038 Trail construction, reconstruction, and relocation are allowed after full consideration of effects on Peaks of Otter salamander populations.

8E2-039 Motorized access is limited to currently existing roads. Off-road and all-terrain vehicles are not permitted.

Appalachian National Scenic Trail

8E2-040 Appalachian Trail management activities are allowed after full consideration of effects on Peaks of Otter salamander populations.

8E2-041 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

8E2-042 Scenic integrity objective is very high within the **primary habitat conservation area** and high within the **secondary habitat conservation area**.

Range

8E2-043 Livestock grazing is not permitted.

Minerals

8E2-044 The **primary and secondary habitat protection areas** are administratively unavailable for federal oil and gas leasing or other Federal mineral leases. These areas are not available for commercial, personal, or free use mineral materials. Administrative use of mineral materials is allowed when a) the materials are used within the habitat protection area itself; and b) use is necessary to protect Peaks of Otter salamander habitat.

Roads

8E2-045 Do not permit new system road construction, subject to valid existing rights and leases.

8E2-046 Decommission roads not needed for recreation access or administration, fire suppression, or vegetation management.

8E2-047 Road improvements, minor relocation, and development of parking facilities are permitted after full consideration of effects on Peaks of Otter salamander populations.

8E2-048 Keep felling and removal of roadside vegetation to the minimum needed for public safety.

8E2-049 Within the **primary habitat conservation area**, limit temporary road construction to occasional short crossings to provide access to areas outside the primary habitat conservation area that could not otherwise be accessed.

8E2-050 Within the **secondary habitat conservation area**, allow temporary road construction after full consideration of effects on Peaks of Otter salamander populations. Following use, temporary roads are scarified, reseeded with native or desirable non-native vegetation, and cover objects (logs or rocks) are dragged into the road.

Lands and Special Uses

8E2-051 The **primary habitat conservation area** is unsuitable for new special uses, except for research and outfitter-guide operations. Phase out existing non-conforming uses and allow to revegetate naturally.

8E2-052 Allow commercial use by outfitters and guides if compatible with preservation of the **primary habitat conservation area**. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

8E2-053 Within **secondary habitat conservation area**, new special use proposals are analyzed on a case-by-case basis to determine the potential effects on the Peaks of Otter salamander.

8E2-054 Do not permit collection or killing of Peaks of Otter salamanders. Scientific field investigations conducted by reputable institutions/individuals may be authorized on a case-by-case basis.

8E4 INDIANA BAT HIBERNACULA PROTECTION AREAS

Indiana bat "hibernacula[4]" protection areas are divided into two management prescriptions: the Primary Cave Protection Area (900 acres) and the Secondary Cave Protection Area (8,800 acres). These Protection Zones are explained in more detail below.

The Indiana bat *(Myotis sodalis)* is a Federally listed endangered species that occurs in several locations across western Virginia. Indiana bats are known to be hibernating in two caves located on the Jefferson National Forest: Shire's Cave on the New Castle Ranger District; and Kelly Cave on the Clinch Ranger District. Both of these caves are gated to protect Indiana bat hibernaculum. In addition, portions of the primary and secondary cave protection areas surrounding caves located on private land are also located on the Jefferson National Forest. These include Rocky Hollow Cave in Wise County, VA; Newberry-Bane Cave in Bland County, VA; and Patton Cave in Monroe County, WV. To provide protection for Indiana bats and their habitat, this management prescription is allocated to approximately 9,700 (1%) acres across the Forest.

[4] Hibernacula refers to caves in which bats hibernate and is used interchangeably with caves throughout this document. The singular form is hibernaculum.

These prescription areas are intended to contribute to the goals of reversing population declines and reestablishing healthy populations of Indiana bats across the eastern United States. Management is based on the guidelines of the Indiana Bat Recovery Strategy for the George Washington and Jefferson National Forests (April, 1997).

Management activities are designed to: 1) protect hibernacula (caves in which the bats spend the winter); 2) maintain and enhance upland and riparian swarming and foraging areas; and 3) identify and protect summer roosting and maternity site habitat. The proposed conservation measures identified in the Indiana Bat Recovery Strategy for the protection and promotion of habitat for Indiana bats on the Jefferson National Forest are applied at three scales:

1) A **primary cave protection area** as consisting of a radius of no less than one half mile around each hibernaculum, defined by national forest surface ownership and topography. This area is intended to protect the integrity of the cave and the immediate surrounding uplands where bats may swarm and forage in the fall.

2) A **secondary cave protection area** as consisting of a radius of approximately 1 ½ miles around each primary cave protection area, defined by easily recognizable features on the ground. This area is designed to further maintain and enhance swarming, foraging, and roosting habitat.

3) Because Indiana bats are known to travel over 200 miles between winter and summer habitats, standards are also applied to the Jefferson National Forest as a whole. These can be found specifically in the Forestwide Direction, Chapter Two, Indiana Bat Management. These standards are designed to protect foraging areas; non-cave associated roosts and maternity sites, if any are discovered on the Forest.

8E4a INDIANA BAT PRIMARY CAVE PROTECTION AREAS

8E4a. Indiana Bat Primary Cave Protection Area

EMPHASIS:

Within this prescription area, habitats are managed to maintain, restore, and enhance Indiana bat populations. Management of the primary cave protection area is focused on protecting the watershed of the cave along with maintaining and enhancing the surrounding environment where bats swarm, forage, and roost. Timber harvest is not appropriate within this prescription area.

DESIRED CONDITION:

This prescription area includes caves known to contain the Indiana bat, as well as the primary cave protection areas surrounding these hibernacula. Indiana bat hibernacula maintain winter temperatures between 39° and 50° F, and relative humidity above 54%. The hydrologic functioning, atmospheric conditions, and structural integrity of these caves are maintained. The ability of bats to enter, exit and move within hibernacula is unhampered. They are free from human disturbance from September 1 until June 1, when bats are hibernating and swarming. It is a long-term goal to acquire lands surrounding caves within the Forest's proclamation boundary that are known to contain the Indiana bat.

The landscapes of these areas predominately feature a structurally diverse older aged forest community with a continuous forested canopy. Grazed pastures are maintained and open woodlands may be restored through prescribed fire or wildland fire use. These types of open habitats provide direct sunlight to roost trees and abundant Indiana bat prey. Cavity trees, cull trees, standing dead trees, storm and fire damaged live trees, and down logs are common throughout the area. Active roost trees are identified and protected from disturbance. At least six roost trees that retain slabs of exfoliating bark, greater than nine inches in diameter, with at least some daily exposure to sunlight are provided per acre. Indiana bat movement and flight paths are not restricted by dense understory vegetation. Indiana bat prey, such as flying insects, are abundant in terms of both numbers of individuals and diversity of species.

Natural processes eventually result in large patches of late successional to old growth forests. Activities to benefit bat habitat are limited to management of forest visitors, prescribed fire, wildland fire use, domestic livestock grazing, selected non-commercial tree cutting, and integrated pest management to control non-native invasive species like gypsy moth and autumn olive. Occasional gaps may occur naturally or purposefully to increase sunlight exposure on selected roost trees. No activities which could lead to disruption of the cave environment or the "taking[5]" of an Indiana bat occur in this area.

Insects and diseases play a natural role in shaping future plant and animal species composition and successional stages across these areas; however, non-native vegetation occurs only as transients and is not self-perpetuating. Biological or species-specific pesticide controls of gypsy moth, hemlock woolly adelgid, autumn olive, and other non-native species are permitted with full consideration of the effects on the Indiana bat, their habitat, and their prey. Timber harvest and pesticide controls may be implemented to aid in the study of effects of non-native pests on the Indiana bat.

Drinking water sources are available in created upland or ridgetop ponds. Ponds typically adjoin mature forest and most have a flight corridor, such as a pasture, road or wildlife linear strip, leading into them. Existing wildlife openings may be maintained. Aside from Indiana bats, wildlife species associated with mid- to late-successional deciduous forest habitats that are

[5] The term "take" is defined by the Endangered Species Act and US Fish and Wildlife Service as any act which adversely affects a listed species including killing, harassing, harming, pursuing, hunting, capturing, or collecting a listed animal. "Harm," in turn, may include significant habitat modification or degradation where it actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

expected to inhabit this area include: hooded warbler, southern pigmy shrew; whip-poor-will; least weasel, downy woodpecker; eastern gray squirrel; and orchard oriole. Because the landscapes in which this prescription lie, including private lands, are over 70% forest cover, one could also expect to find area-sensitive mid- to late-successional forest species including: ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides suitable habitat for eastern wild turkey and black bear.

Low-impact (dispersed) recreational uses of these prescription areas are compatible with the long-term conservation of the Indiana bat. These include hiking, hunting, backpacking, picnicking, photography, and wildlife study. Spelunking may be allowed when the bats are not using the caves for hibernation. Existing trails and roads are used for access to specified areas for these activities, although decommissioning of existing roads may occur. Off-road vehicle use is prohibited. Educational materials describing the Indiana bat, its geographical distribution, its habitat, fragility, and conservation efforts are readily available to visitors of the area. The Indiana bat is actively protected against collection and killing, except for specified scientific purposes. Trail and road reconstruction, minor relocation, and new parking facilities are permitted. All activities are conducted with full consideration of effects on Indiana bat populations.

8E4b. Indiana Bat Secondary Cave Protection Area

EMPHASIS:

Within this prescription area, habitats are managed to maintain, restore, and enhance Indiana bat populations. The goals of the secondary cave protection area are to maintain and enhance swarming, roosting, and foraging habitat and to involve regularly scheduled vegetation management activities to maintain and enhance mid- to late-successional oak-hickory forests, open woodland habitats, and the trees that are most likely to develop and retain slabs of exfoliating bark. Commercial timber harvest is frequently the most practical and economical method of achieving these goals.

DESIRED CONDITION:

Management of the secondary cave protection area is focused on maintaining and enhancing swarming, roosting, and foraging habitat. The landscapes of these areas feature a structurally diverse older aged forest community with an almost continuous forested canopy. Where ecologically suitable, open pine-oak woodlands with a mature overstory and grassy understory are restored. Oak-hickory forests are managed to favor trees which develop and retain slabs of exfoliating bark including: shagbark hickory, bitternut hickory, white ash, red oak, chestnut oak, white oak, red maple, sugar maple, black gum, sycamore, black locust, and southern yellow pines. Cavity trees, cull trees, standing dead trees, storm and fire damaged live trees, and down logs are common throughout the area. These areas contribute small patches of late-successional to old growth forests to the forestwide matrix. Active roost trees are identified and protected from disturbance. At least six roost trees that retain slabs of exfoliating bark, greater than nine inches in diameter, with at least some daily exposure to sunlight are provided per acre. Indiana bat movement and flight paths are not restricted by dense understory vegetation. Indiana bat prey, such as flying insects, are abundant in terms of both numbers of individuals and diversity of species.

Management activities designed to benefit bat habitat are used more frequently in the secondary cave protection area to maintain and enhance mid- to late-successional oak-hickory forests, open woodland habitats, and the trees that are most likely to develop and retain slabs of exfoliating bark. Additional trees with roosting potential are selected and sunlight conditions surrounding them are improved. Larger diameter snags with exfoliating

8E4b Indiana Bat Secondary Cave Protection Areas

bark are promoted and retained. Optimal foraging habitat with 50-70% canopy closure is provided to maximize both flying insect production and Indiana bat foraging success. 60% of these areas are greater than 70 years of age, and 40% of the oak-hickory forest types are greater than 80 years of age. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities may be enhanced through commercial and non-commercial vegetation management activities.

Four to ten percent of the secondary cave protection area may be in early-successional forest conditions to provide flight corridors and foraging habitat, provided other habitat objectives are also met. Drinking water sources are available in created upland or ridgetop ponds. Ponds typically adjoin mature forest and most have a flight corridor, such as a road or wildlife linear strip, leading into them. Existing wildlife openings are maintained along with occasional creation of new openings. Wildlife species associated with mid- to late-successional deciduous forest habitats and mixed landscapes that are expected to inhabit these areas include: hooded warbler, southern pigmy shrew; whip-poor-will; least weasel, downy woodpecker; eastern gray squirrel; and orchard oriole. This management prescription also provides suitable habitat for ruffed grouse, eastern wild turkey and black bear. These areas provide excellent opportunities for wildlife viewing and hunting. Because the landscapes in which this prescription lie, including private lands, are over 70% forest cover, one could also expect to find area-sensitive mid- to late-successional forest species including: ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler.

Non-native vegetation occurs only as transients and is not self-perpetuating. Biological or species-specific pesticide controls of gypsy moth, hemlock woolly adelgid, autumn olive, and other non-native species are permitted with full consideration of the effects on the Indiana bat, their habitat, and their prey. Timber harvest and pesticide controls may be implemented to aid in the study of effects of non-native pests on the Indiana bat.

Low-impact (dispersed) recreational uses of these prescription areas are compatible with the long-term conservation of the Indiana bat. These include hiking, hunting, backpacking, picnicking, photography, and wildlife study. Existing trails and roads are used for access to specified areas for these activities, although decommissioning of existing roads may occur. Off-road vehicle use is prohibited. Educational materials describing the Indiana bat, its geographical distribution, its habitat, fragility, and conservation efforts are readily available to visitors of the area. The Indiana bat is actively protected against collection and killing, except for specified scientific purposes. Trail and road reconstruction, minor relocation, and new parking facilities are permitted. All activities are conducted with full consideration of effects on Indiana bat populations.

Standards

Forestwide standards for protection and management of the Indiana bat are supplemented in this prescription area by the following standards specific to cave-associated habitats.

When not specifically stated otherwise, these standards refer to both the primary (8E4a) and secondary (8E4b) cave protection areas.

Primary Cave Protection Area

8E4-001 Each Indiana bat hibernaculum will have a primary buffer consisting of a radius of no less than one half mile around each hibernaculum, defined by national forest surface ownership and topography.

8E4-002 No disturbance that will result in the potential taking of an Indiana bat will occur within this buffer.

- Commercial timber harvesting, road construction, use of the insecticide diflubenzuron, creation of early successional habitat, expansion or creation of permanent wildlife openings, and mineral exploration and development are prohibited.
- Prescribed burning, tree cutting, road maintenance, and integrated pest management using biological or species-specific controls are evaluated during project level analysis to determine the direct, indirect, and cumulative effects on Indiana bats and the hibernacula.

8E4-003 All currently known hibernacula are gated. If additional hibernacula are found, the caves are gated, if necessary, to protect Indiana bats during the critical hibernation period.

8E4-004 All caves may be opened for public use during the summer months for recreational use from June 1 to September 1.

Secondary Cave Protection Area

8E4-005 A secondary buffer consisting of a radius of approximately 1½ miles around each **primary cave protection area,** defined by easily recognizable features on the ground, will have limited disturbance.

8E4-006 Within the **secondary cave protection area**, the following management activities can occur following evaluation to determine the direct, indirect, and cumulative effects on Indiana bats and the hibernacula:

- Regeneration timber sales;
- Thinning;
- Road construction or reconstruction;
- Prescribed burning;
- Trail construction or reconstruction;
- Special uses; and
- Biological or species-specific pesticide use.

Active Maternity Site Protection

8E4-007 If active maternity roost sites are identified on the Forest, they are protected with a 2-mile buffer defined by the maternity roost, alternate roost sites, and adjacent foraging areas. See Forestwide standards.

Active Roost Tree Protection

8E4-008 As active roost trees are identified on the Forest, they are protected with a ¼ mile buffer surrounding them. This protective buffer remains until such time they no longer serve as a roost (e.g., loss of exfoliating bark or cavities, blown down, or decay). See Forestwide standards.

Terrestrial and Aquatic Species

8E4-009 Management for other plant and animal species within the **primary cave protection areas** is evaluated during project level analysis to determine the direct, indirect, and cumulative effects on Indiana bats and the hibernacula.

8E4-010 Opportunities should be sought to include creation of drinking water sources for bats in project plans, where appropriate, in areas where no reliable sources of drinking water are available. Opportunities are considered when the creation is not detrimental to other wetland-dependent species (i.e., damage to natural springs and seeps).

8E4 INDIANA BAT HIBERNACULA PROTECTION AREAS

8E4-011 Limit creation of early successional habitat to 10 percent of forested acres in the **secondary cave protection area**. Creation of early successional habitat in the **primary cave protection area** is prohibited.

8E4-012 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife may be present and maintained within both the **primary and secondary cave protection areas**, but no expansion of openings or creation of new permanent openings of this type occurs within the **primary cave protection area**. Native species are emphasized when establishing food plants for wildlife. Some openings provide permanent shrub/sapling habitat as a result of longer maintenance cycles.

8E4-013 Structural habitat improvements for fish and other aquatic species are allowed.

Threatened, Endangered and Sensitive Species

8E4-014 Management for other known populations of threatened, endangered, sensitive, and locally rare species within the **primary cave protection areas** are evaluated during project level analysis to determine the direct, indirect, and cumulative effects on Indiana bats and the hibernacula.

Rare Communities and Old Growth

8E4-015 Maintain rare communities in both the **primary and secondary cave protection areas**.

8E4-016 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

8E4-017 Allow vegetation management activities within **primary cave protection areas** to:

- Promote trees that retain slabs of exfoliating bark;
- Promote large diameter roost trees with some daily exposure to sunlight;
- Thin dense midstories that restrict bat movement;
- Improve other threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Restore historic fire regimes, particularly in pine and pine-oak woodlands;
- Reduce insect and disease hazard to oak-hickory forest communities;
- Control non-native invasive vegetation.

8E4-018 Allow vegetation management activities within **secondary cave protection areas** to:

- Maintain oak-hickory forest communities; and restore pine and pine-oak woodlands;
- Promote trees that retain slabs of exfoliating bark;
- Promote large diameter roost trees with some daily exposure to sunlight;
- Thin dense midstories that restrict bat movement;
- Improve other threatened, endangered, sensitive, and locally rare species

habitat;

- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups;
- Restore, enhance, or mimic historic fire regimes;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation;
- Salvage dead and dying trees as a result of insects, diseases, or other natural disturbance events;
- Provide up to 10% early successional habitat conditions.

8E4-019 Strive for optimum roosting habitat of 16 or more Class 1 and/or Class 2 trees greater than 9 inches d.b.h. per acre, as averaged across the prescription area associated with each hibernaculum. Class 1 trees are those species which are most likely to have exfoliating bark either in life or after death, and which are most likely to retain it for several years after they die. Class 2 trees characteristically have exfoliating bark as well, but are considered to be of slightly lower quality than Class 1 trees. See Table 3-2.

Table 3-2. Class 1 and Class 2 Trees

Class 1 Trees
Carya cordiformis (bitternut hickory)
Carya laciniosa (shellbark hickory)
Carya ovata (shagbark hickory)
Fraxinus americana (white ash)
Fraxinus pennsylvanica (green ash)
Quercus alba (white oak)
Quercus prinus (chestnut oak)
Quercus rubra (red oak)
Quercus stellata (post oak)
Ulmus rubra (slippery elm)
Class 2 Trees
Acer rubrum (red maple)
Acer saccharum (sugar maple)
Aesculus octandra (yellow buckeye)
Betula lenta (sweet birch)
Carya glabra (pignut hickory)
Carya spp. (other hickories)
Fagus grandifolia (American beech)
Liriodendron tulipifera (tulip poplar)
Nyssa sylvatica (black gum)
Platanus occidentalis (sycamore)
Robinia pseudoacacia (black locust)
Quercus coccinea (scarlet oak)
Quercus velutina (black oak)
Sassafras albidum (sassafras)
Pinus echinata (shortleaf pine)
Pinus virginiana (Virginia pine)
Pinus rigida (pitch pine)
Pinus pungens (table mountain pine)

Timber Management

8E4-020 **Primary cave protection areas** are unsuitable for timber production. Commercial timber harvest is not allowed.

8E4-021 **Secondary cave protection areas** are suitable for timber production. The remainder of the standards under this section refers only to the secondary cave protection area.

8E4-022 Clearcutting is prohibited.

8E4-023 In order to promote fall foraging and swarming areas, timber activities will leave all shagbark hickory trees and retain a minimum average of 6 snags or cavity trees (greater than or equal to 9 inches d.b.h.) per acre as potential roost sites (except where they pose a safety hazard). For group selection harvest method, all shagbark hickories are maintained (except where they pose a safety hazard) with no provision for minimum number of snags or cavity trees due to the small opening size.

8E4-024 Forested communities are maintained using either of two following criteria:

A minimum of 60% of the acreage of all Forest Types are maintained over 70 years of age; and a minimum of 40% acreage of CISC Forest Types 53 (white oak, red oak, hickory) and 56 (yellow poplar, white oak, red oak) are maintained at an age greater than 80 years old;

OR

When the above age criteria cannot be met, forest stands receiving even-aged regeneration harvesting are maintained with a minimum of 20 trees per acre in the

10-16 inch d.b.h. class and 15 trees per acre in the greater than 16 inch d.b.h. class, of which two trees per acre must be 20 inches d.b.h. or greater.

8E4-025 The 0 - 10 age class will not exceed 10% at any time (regardless which of the criteria above are used).

8E4-026 Timber marking and harvesting crews will receive training in the identification of potentially valuable roost trees.

8E4-027 Timber harvesting operations will be suspended from September 15 until November 15.

8E4-028 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Non-timber Forest Products

8E4-029 Do not issue authorizations for the commercial or personal use of any forest products, including firewood.

Prescribed Fire and Wildland Fire Use

8E4-030 Prescribed burning and wildland fire use is allowed to manage vegetation to maintain flight and foraging corridors in upland and riparian areas potentially used by bats in the summer.

Recreation

8E4-031 Maintain trails to the minimum standard necessary for protection of the soil, water, vegetation, visual quality, user safety, and long-term maintenance.

8E4-032 New trail construction is allowed only within the **secondary cave protection area**.

8E4-033 Licensed OHV use is permitted in this prescription area only on existing open roads.

Scenery

8E4-034 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

8E4-035 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive non-motorized areas within this prescription area.

Range

8E4-036 In order to maintain open woodland and grassland conditions suitable for fall swarming and roosting, livestock grazing is permitted to continue where it currently exists.

Minerals

8E4-037 The **primary cave protection areas** are administratively unavailable for oil and gas and other Federal leasable minerals. Existing leases are not renewed upon expiration. These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the primary cave protection area itself; and b) use is necessary to protect Indiana bat habitat.

8E4-038 Within the **secondary cave protection areas**, oil and gas are allowed with a timing stipulation to protect Indiana bat habitat from September 15 to November 15. Other Federal minerals are allowed on a case-by-case basis after full consideration of effects on Indiana bat habitat. Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect Indiana bat habitat.

8E4-039 The Kelly Cave area is underlain by private mineral rights. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to Indiana bat habitat when possible.

Roads

8E4-040 Within the **primary cave protection area**, do not permit road construction, subject to valid existing rights or leases. Road reconstruction and minor relocation are permitted to benefit the Indiana bat and its habitat.

8E4-041 New construction and reconstruction are allowed in the **secondary cave protection area**.

8E4-042 Decommission roads when adversely affecting caves, their hydrology, or Indiana bat habitat security.

Lands and Special Uses

8E4-043 The Rocky Hollow Cave (Clinch Ranger District) is given a high priority for acquisition (on a willing seller basis) since it is one of the largest known historic hibernacula in Virginia and is situated adjacent to national forest lands.

8E4-044 **Primary cave protection areas** are unsuitable for new special uses, except for research and outfitter-guide operations. Phase out existing non-conforming uses.

8E4-045 Allow commercial use by outfitters and guides if compatible with preservation of the **primary cave protection areas**. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

8E4-046 Within **secondary cave protection areas**, new special use proposals are analyzed on a case-by-case basis to determine the potential effects on the Indiana bat.

8E6 OLD FIELD HABITAT EMPHASIS

8E6 OLD FIELD HABITAT EMPHASIS

This management prescription is allocated to approximately 1,300 acres (<1%) across the Forest. This prescription area contains both lands suitable and unsuitable for timber production.

EMPHASIS:

The emphasis of this prescription is to provide optimal to suitable habitat for species associated with habitats known as "old fields." This habitat structure is becoming increasingly rare as abandoned farmsteads grow up into mature forests and working agricultural lands are managed more efficiently. The National Forest has an important role to play in providing this form of habitat for the steadily declining suite of species that either requires it, or uses it heavily, including: chestnut-sided, golden-winged, and blue-winged warblers; vesper, chipping, and field sparrows; and northern bobwhite. Management activities are designed to: 1) maintain and restore areas interspersed with grass/forb areas (warm or cool season), shrubby patches, and areas with a scattering of trees of varying species, sizes, and ages; 2) provide a diversity of successional classes in the surrounding forested communities; and 3) control access to protect habitat when necessary.

DESIRED CONDITION:

The landscapes of this prescription are largely pastoral, resembling poorly managed or abandoned farms. These areas are intensively managed for a high degree of structural habitat diversity. Management activities such as burning, mowing, and tree or shrub cutting may be evident to the public. 10% to 100% of these prescription areas are maintained in a permanent old field condition, including approximately one-third in a grass/forb stage with the other two-thirds in a shrub-seedling-sapling stage. Within the old fields themselves, clumps of scattered trees provide cavity nesting habitat and raptor perches. This habitat in the 2100 to 2500 foot elevation range is important for species like the chestnut-sided warbler, golden-winged warbler, and vesper sparrow and may also include open woodlands, regenerating forests, balds, and utility rights-of-way. Many patches of these habitats are over 20 acres in size and clustered on the landscape to provide optimum habitat for dependent species.

Developments throughout the area may include ponds, wetlands, development and maintenance of hedgerows and fields, plantings and seedings of food and cover grasses, herbs, shrubs, and trees, and the creation, restoration, and maintenance of forest openings.

In addition to the species associated with old field habitats listed above, wildlife species associated with early successional forest habitats expected to inhabit this area include raptors like red-shouldered hawks and great horned owls, woodpeckers like the northern flicker and yellow-bellied sapsucker, and small mammals such as the least weasel and eastern cottontail. Game species like ruffed grouse, white-tail deer, and black bear may also be frequent visitors to this area.

Prescribed fire plays an important role in both the restoration and maintenance of the old field habitats as well as maintenance of many of the forested and woodland communities found throughout this area. Even-aged timber management is also an important tool to maintain the desired mix of age classes when forested ecosystems are included within the prescription area. Tree ages vary from area to area, but the focus is on the younger age classes with a minimum of 10% of the area in a dispersed system of permanent and transitory grass/forb openings and a minimum of 20% of the area in the maintained or transitory shrub/seedling stage. The actual percentage of early successional and old field habitats varies across time and space based on historic occurrences of the old fields,

naturally-occurring woddland/savannah/grassland habitats, actual occurrences of natural disturbances, the efficiency of scheduling management activities, and the percent of the prescription area maintained in forested communities.

Within the forested portion of the prescription area, regeneration harvest areas range in size from 10 to 40 acres scattered across the landscape. Harvest systems may include coppice with reserves, two-aged systems, and clearcuts. Thinning and group selection silvicultural systems may be employed to restore open woodland/savannah/grassland habitats or increase the structural diversity in the more mesic forest habitats.

The recreation experience in this area is not considered remote. Access is provided through portions of the area on Forest Service and State roads with a gravel or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use may occasionally occur on designated trails in the area, but is generally discouraged to provide wildlife habitat security. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

Forest visitors on foot, horse, or bikes occasionally experience feelings of solitude, challenge, or risk. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. This area provides outstanding opportunities for wildlife viewing, photography, and hunting, but facilities are not developed to promote these activities. During most of the year, encounters with other forest visitors can be expected; however, these encounters are more frequent during spring and fall hunting seasons.

The protection of rare communities and species associates is provided, along with the protection measures for population occurrences of threatened, endangered, sensitive, and locally rare species. This provides a high likelihood that species within these associations continue to persist on National Forest System lands.

Sometimes these old fields lie within the foreground the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

OBJECTIVES

8E6-OBJ1 Maintain a minimum of 10 percent of the prescription area in early successional forest habitat conditions (stand age less than 10 years, openings 10 acres in size and greater).

STANDARDS

Terrestrial and Aquatic Species

8E6-001 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements are present and maintained or enlarged. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/ sapling habitats as a result of longer maintenance cycles.

Vegetation and Forest Health

8E6-002 10-100% of the prescription area consists of a dispersed system of permanent openings and transitory openings created through both natural disturbance events and forest management activities.

8E6 OLD FIELD HABITAT EMPHASIS

8E6-003 The forest health strategy is to minimize the occurrence of pest problems by managing host-type conditions. Suppression of pests, both non-native and native, is accomplished with all available integrated pest management tools.

Timber Management

8E6-004 Portions of these areas are suitable for timber production.

8E6-005 Use even-aged silvicultural systems. Regeneration units range from 10 to 40 acres in size.

8E6-006 Regeneration harvest areas are primarily clearcuts.

8E6-007 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	80-100
Cove hardwoods	70-90
White pine	60-80
Yellow pine	60-80
Scarlet oak/Black oak	60-80

8E6-008 Salvage of dead and dying trees is allowed.

Non-timber Forest Products

8E6-009 Commercial and personal use firewood collection is allowed.

Prescribed Fire and Wildland Fire Use

8E6-010 Prescribed fire, wildland fire use, and mechanical treatments are allowed to maintain herbaceous openings and old fields. They are also used in conjunction with site preparation to accomplish silvicultural treatments.

Recreation

8E6-011 Wildlife openings and old fields are signed to protect established vegetation from recreational use (e.g. horseback riding, mountain biking, OHV use, and camping) when a reoccurring problem exists.

8E6-012 Designated OHV routes and mountain bike use may be restricted if negatively impacting nesting or brood-rearing habitat.

Scenery

8E6-013 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

Appalachian National Scenic Trail

8E6-014 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Roads

8E6-015 Do not increase current open system road density levels calculated across each prescription block.

9A1 SOURCE WATER PROTECTION WATERSHEDS

This management prescription is allocated to approximately 19,200 acres (3%) across the Jefferson National Forest. Safe drinking water is essential to protect public health. Managing land to prevent or mitigate source water contamination is often more cost-effective and may better protect human health than treating water after it has been contaminated. Water from national forests are relatively low in contaminants when compared with urban and agricultural land uses. Nevertheless, many common practices on forests can contaminate drinking water sources if proper mitigating measures are not applied.

The Safe Drinking Water Act Amendments of 1996 require every State to perform source water assessments of all public drinking water sources and make the results public by 2003. In Virginia, Source Water Protection areas are delineated 5 miles upstream from the intake for water systems, which serve at least 25 people for 60 days or more per year.

Management of source water protection areas is designed to protect both surface and ground water drinking water sources while also taking a more active role in maintaining the health of the forest communities through vegetation management and providing for the needs of early successional wildlife habitat across the Forest. The Jefferson National Forest serves as the source of several public drinking water supplies in Virginia and is expected to participate with the State and local government in preparing assessments to assure safe drinking water. On the Jefferson National Forest these are:

- North Fork of the Pound Reservoir serving Pound, Virginia;
- John W. Flanagan Reservoir serving portions of Dickenson and Buchanan Counties, Virginia;
- Big Cherry Reservoir serving Big Stone Gap, Virginia;
- Town of Duffield, Virginia;
- Town of Bland, Virginia;
- Gatewood Reservoir serving Pulaski, Virginia;
- Catawba Sanitorium; and
- Bedford Lake, serving Bedford, VA.

The source water protection areas for the North Fork of Pound Reservoir and Bedford Lake are allocated to management prescriptions 4K6 and 8E2, respectively. This desired condition and standards for these management prescriptions are consistent with the protection of these source water areas.

EMPHASIS:

The emphasis of this prescription is to provide clean drinking water by maintaining healthy watersheds containing healthy forests.

DESIRED CONDITION:

The surface and ground water flowing from source water protection areas on the Jefferson National Forest meet or exceed all Federal and State requirements for safe drinking water. Streams within source water protection watersheds reflect the physical, chemical, and biological structures that sustain high quality water.

Forest management activities within these areas are focused on protecting drinking water sources while maintaining healthy and vigorous forest that are less susceptible to large

9A1 SOURCE WATER PROTECTION AREAS

scale insect and/or disease episodes. Forest vegetation is composed of a variety of species and ages at appropriate stocking levels that reduce the potential impacts of insects and/or diseases to alter water quality either through direct contamination or indirect impacts associated with severe tree mortality and/or potential catastrophic fire. Practices to prevent contamination of drinking water sources are applied and monitored. Riparian corridors are maintained, restored, and enhanced to maximize water quality. Channeled ephemeral stream zones are managed as part of the riparian corridor within these watersheds. Management activities that concentrate pollutant transport to streams or water bodies are mitigated and promptly rehabilitated to reduce impacts.

Significant potential sources of drinking water contamination are identified and the susceptibility of the water supply to contamination from these sources is determined. Existing roads, trails, developed and dispersed recreation sites, and areas of concentrated recreation use are examined and problems mitigated. Old mining, grazing, and agricultural areas are stabilized and rehabilitated where necessary.

Dams to store municipal drinking water are frequently found immediately downstream from these areas on State or private lands. Expansion of these reservoirs to provide additional drinking water needs may be necessary in the future. Water-based recreation and associated facilities may be developed and maintained when these reservoirs are on or adjacent to national forest land and such development is acceptable to the municipality.

These areas are characterized by a predominance of mid- and late-successional forests with multiple canopy layers, which provide a variety of habitat niches and thermal and protective cover for wildlife. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities may be enhanced through commercial and non-commercial vegetation management activities. Snags used by birds, bats, and small animals are abundant.. Up to four percent of forested land may be in early-successional forest conditions created both naturally and purposefully when compatible with the source water protection objectives of these watersheds. Habitat conditions in these areas focus on the protection of drinking water quality while contributing to broader forest goals related to wildlife habitat.

Low intensity commercial timber harvest and prescribed fire use are appropriate to maintain the long-term goals and stewardship objectives of the source water protection watershed. Relatively longer rotation ages and a lower percentage of early successional forest in these areas reflect a “low intensity” approach to vegetation management and the higher priority of protecting drinking water. These activities are designed to maintain and restore a variety of native species and ages at appropriate stocking levels that are resistant to large-scale disturbances that could affect drinking water. These large-scale disturbances include wildland fires, landslides, and insect and disease epidemics (including but not limited to gypsy moth, southern pine beetle, and oak decline). Timber harvesting operations focus on what is retained in the stand, not on wood fiber production. Timber harvest practices are modified to recognize the watershed values of these lands. Stewardship objectives are: to restore watersheds; to maintain or increase water quality; to maintain, restore, and/or enhance the diversity and complexity of native vegetation; to reduce fuel buildups; to provide habitat for a variety of wildlife species; to maintain developed recreation facilities; to salvage timber; or to control non-native invasive vegetation or pests. Timber harvest associated with minerals and rights-of-way is also appropriate.

A broad spectrum of recreation opportunities exist within these watersheds, from rural settings within developed recreation areas to remote non-motorized experiences in the cores of some watersheds. Appropriate restroom and sanitation facilities are provided at all areas where recreationists tend to congregate. Off-road vehicle use is prohibited.

Access is provided through portions of these areas on well-maintained Forest Service and State roads. Public access is coordinated with municipalities in regard to security of water supply.

Existing federal oil and gas leases, as well as reserved and outstanding mineral rights, exist within four of these watersheds. Access and facilities necessary to exercise these leases and rights are engineered to prevent contamination of drinking water sources and managed as closed to public motorized travel.

OBJECTIVES

9A1-OBJ1 Maintain a Forest Service open road density at or below 1.0 miles per square mile (applies to National Forest System roads only).

STANDARDS

Water, Soil, and Air

9A1-001 Channeled ephemeral stream zones are managed as part of the riparian corridor.

Terrestrial and Aquatic Species

9A1-002 Wildlife and fish habitat improvements are allowed to enhance wildlife viewing, hunting, and fishing opportunities with drinking water protections accorded.

9A1-003 Existing old fields, pastoral areas, and wildlife openings may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Rare Communities and Old Growth

9A1-004 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

9A1-005 Non-native, invasive forest insect and disease outbreaks are controlled. Prohibit broadcast application of chemical pesticides. Use only biological control methods, like pheromone flakes, *Bacillus thuringiensis* var. *kurstaki* (Btk).

9A1-006 Eradicate non-native invasive plants when the infestations are isolated. Use approved hand-applied chemicals, when necessary.

9A1-007 Up to 4% of the acres can be in early successional habitat in patches of 2 to 20 acres, clustered on the landscape.

9A1-008 Allow vegetation management activities to:

- Maintain and restore stand structure and native species composition that is resistant to large scale disturbances that could affect drinking water including wildland fires, landslides, and insect and disease epidemics;
- Reduce fuel buildups;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation;

- Maintain, enhance, or restore the diversity and complexity of native vegetation;
- Provide for public health and safety;
- Maintain developed recreation facilities, including roads and trails;
- Enhance both game and non-game wildlife habitat for viewing, photography and hunting;
- Improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance.

Timber Management

9A1-009 These areas are suitable for timber production.

9A1-010 Even and uneven aged management systems are allowed.

9A1-011 Reserve trees in even aged harvest areas display good form.

9A1-012 Commercial thinning is commonly used to develop park-like stands and larger trees for aesthetic reasons.

9A1-013 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-180
Cove hardwoods	120-180
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Prescribed Fire and Wildland Fire Use

9A1-014 Wildland fire use is not allowed.

9A1-015 Use of prescribed fire is allowed to manage vegetation.

Recreation

9A1-016 These areas are unsuitable for designation of new OHV routes or ATV use areas, unless crossing the area is the only feasible alternative or results in less environmental impact.

Scenery

9A1-017 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

9A1-018 Management activities are designed to meet or exceed a high Scenic Integrity Objective in semi-primitive non-motorized areas within this prescription area.

9A1-019 Generally, do not authorize new utility corridors or communication sites within the foreground and middle ground viewsheds of reservoirs.

Range

9A1-020 Where grazing is currently allowed and under a permit, control and mitigate to restore, maintain, or enhance the integrity of channels and banks and prevent contamination of drinking water sources. Existing grazing permits may be reauthorized if continued grazing would have no negative impact on drinking water sources.

Roads

9A1-021 Road construction or reconstruction is informed by a watershed-scale road analysis.

9A1-022 New roads are engineered to prevent contamination of drinking water sources and managed as closed to public motorized travel.

9A1-023 Roads identified as problems are reconstructed, relocated, or decommissioned.

9A1-024 Decommission roads when they are no longer needed.

Minerals

9A1-025 The source water protection areas are available for federal oil and gas leasing with controlled surface use to protect drinking water. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on source water.

9A1-026 Permit mineral materials for commercial, personal, free, and administrative use purposes with conditions to protect drinking water.

9A1-027 Some of these areas on the Clinch Ranger District are underlain by private mineral rights or are currently under lease. Roads, wells, and other necessary infrastructure associated with these leases and rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Such interests are required to follow state laws regarding protection of source water areas.

Lands and Special Uses

9A1-028 Special uses may be authorized if consistent and compatible with the protection of a high-quality drinking water source. Prior to reauthorization, review existing uses for compatibility with goals and objectives of this prescription.

9A2 REFERENCE WATERSHEDS

There are approximately 10,800 acres (1%) of reference watersheds across the Jefferson National Forest. Reference watersheds generally lie beneath other management prescriptions, as shown in Table 3-3.

EMPHASIS

The streams within these small (300-2400 acres) watersheds have existing water quality conditions considered to be the "best attainable" for the ecological sub-section under relatively undisturbed, natural situations.

DESIRED CONDITION

These watersheds are maintained in a relatively undisturbed condition, with a low level of human intervention or impact. These areas retain a natural, forested appearance shaped primarily by natural processes. Uneven-aged forest communities with intermediate to high shade tolerance dominate the area. Landscapes feature a structurally diverse older aged forest community with a continuous forested canopy, with the exception of occasional gaps created by storms, insects, diseases, fire or along roads and trails. Infrequent pastoral and historic/cultural enclaves may also exist. The valued character of these landscapes appears intact with no noticeable deviations. The landscape character ranges from naturally evolving to naturally appearing.

Insects and diseases, primarily gypsy moth, hemlock woolly adelgid, and southern pine beetle, play a major role in shaping future species composition and successional stages across these areas. Non-native vegetation occurs only as transients and are not self-perpetuating. Snags used by birds, bats, and small animals are abundant. Dying and down trees are common, often in natural patches.

These watersheds are classified as unsuitable for timber production and commercial timber harvest is not appropriate. A combination of prescribed fire, wildland fire use, and incidental felling of trees maintain some early successional shade intolerant forest communities, however uneven-aged forests with intermediate to high shade tolerance dominate the area.

Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides optimal to suitable habitat for other mid- to late-successional species including hooded warbler,

Table 3-3. Relationship of Reference Watersheds to Overlying Management Prescriptions

Reference Watershed	Overlying Management Prescription	
Cornelius Creek	4K1	North Creek Special Area
Belfast Creek & Snow Creek	1A	James River Face Wilderness
Stony Run	4K2	Hoop Hole Special Area
Sulfur Hollow	12B	Price Mountain Backcountry
War Spur Branch	1A	Mountain Lake Wilderness
Little Wolf Creek	1B	Little Wolf Creek Recommended WSA
Lewis Fork	1A	Lewis Fork Wilderness
Nutt Run	4K6	North Fork Pound Special Area

southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk. In addition, the distribution of these areas will provide denning sites for black bear within its range. The protection of rare communities and species associates will be provided, along with protection measures for population occurrences for threatened, endangered, sensitive, and locally rare species.

The majority of these watersheds are surrounded by wilderness or backcountry areas therefore, recreation management is generally designed to provide solitude and remoteness in the most primitive and natural recreation setting possible. However, the Blue Ridge Parkway traverses the ridgeline above the Cornelius Creek watershed and the Cornelius Creek National Recreation Trail meanders back and forth across the creek.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Trails lie lightly on the land, typically narrow and blending well with the natural surroundings. Visitors are physically challenged as they ford streams and climb over downed trees. Off-road vehicle use is prohibited. Very few facilities are provided, one exception being Appalachian Trail shelters. Outside of designated or recommended wilderness, informational signs, bridges, waterbars, and other such structures are used to protect watershed resources and values.

Due to the nature of these watersheds extending from ridgetop to vally bottom, it may on occasion be necessary for a road to skirt the edge of these watersheds in order to access an adjacent area resulting in less environmental impact. All new and existing roads and trails within these watersheds are engineered, monitored, and maintained to protect water quality at reference conditions. More stringent standards regarding roads, trails, and other management activities apply to reference watersheds located within other management prescription areas.

Existing federal oil and gas leases, as well as reserved and outstanding mineral rights, exist within two of these watersheds. Access and facilities necessary to exercise these leases and rights are engineered to minimize negative impacts to the reference watershed, managed as closed to public motorized travel, and decommissioned when no longer needed for mineral access. Monitoring of stream conditions prior to, during, and following mineral activities aid in future evaluation of effects and design of mitigating measures.

STANDARDS

Water, Soil, and Air

9A2-001 Use Minimum Tool Analysis for placing monitoring instrumentation in wilderness.

9A2-002 Alteration of stream chemistry through addition of lime or other minerals is prohibited.

Terrestrial and Aquatic Species

9A2-003 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are not maintained, and succeed to forest, deteriorate over time,

or are removed. New permanent wildlife openings are not created.

9A2-004 Large woody debris is naturally occurring.

Threatened, Endangered, And Sensitive Species

9A2-005 Within the Peaks of Otter salamander habitat conservation area, activities in this corridor must comply with the Habitat Conservation Agreement. See Management Prescriptions 8E2a. and 8E2b for Peaks of Otter salamander habitat conservation area management direction.

Rare Communities and Old Growth

9A2-006 Rare communities requiring disturbance are maintained through wildland fire use, prescribed fire, timber harvest, or felling and leaving of trees.

9A2-007 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

9A2-008 Forest insect and disease outbreaks are controlled only if necessary to prevent unacceptable damage to resources on adjacent land, prevent a loss to the reference watershed resource due to non-native pests, or protect threatened, endangered, and sensitive species.

9A2-009 Gypsy moth Slow the Spread actions are allowed.

9A2-010 Prescribed fire, use of wildland fire, and felling of trees may be used to:

- provide for public health and safety;
- maintain developed recreation facilities, including roads and trails;
- maintain rare communities and species dependent on disturbance;
- reduce fuel buildups; or
- control non-native invasive vegetation.

Timber Management

9A2-011 These lands are unsuitable for timber production. Timber harvest and salvage are not allowed, except along rights-of-way for access roads.

Wildland Fire Suppression

9A2-012 Tractor-plow units or bulldozers are allowed only on fires with an imminent threat to life or private property that cannot be controlled by other means. Evidence of such use is obliterated as soon as practicable.

Prescribed Fire and Wildland Fire Use

9A2-013 Prescribed fire and wildland fire use are allowed to reduce wildland fire potential due to high fuel loadings and to manage vegetation.

9A2-014 Use natural fuel breaks such as streams, roads, rock slides, etc. where possible to minimize fireline construction.

9A4-015 Use the least ground disturbing method of fireline construction, favor blacklines and handtools. Revegetate and water bar firelines as quickly as possible.

Recreation

9A2-016 Existing trails are maintained. Identify soil and water problems and relocate,

reconstruct, or decommission trails when needed.

9A2-017 Mountain bikes and horses are restricted to designated trails.

9A2-018 Off-road and all-terrain vehicles are not permitted.

Scenery

9A2-019 Management activities are designed to meet the following Scenic Integrity Objectives, which vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	VH	H	H	H	H	H	H

Range

9A2-020 Livestock grazing is not permitted.

Minerals

9A2-021 Reference watersheds are available for federal oil and gas leasing with a no surface occupancy stipulation unless they lie within a prescription withdrawn from mineral leasing or administratively unavailable. Other Federal minerals may be available on a case-by-case basis.

9A2-022 These areas are not available for mineral materials for commercial, personal, administrative, or free use purposes.

9A2-023 Federal oil and gas leases and reserved and outstanding mineral rights exist in the Nutt Run reference watershed. Roads, wells, and other necessary infrastructure associated with these leases and rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize surface disturbances when possible.

Roads

9A2-024 Authorize new roads to access valid existing rights and mineral leases, or if entering the reference watershed to access an adjacent watershed results in less environmental impact.

9A2-025 New roads are engineered to mitigate impacts to water and aquatic resources and managed as closed to public motorized travel.

9A2-026 Roads identified as problems are reconstructed, relocated, or decommissioned.

9A2-027 Decommission roads when they are no longer needed.

Lands and Special Uses

9A2-028 These watersheds are unsuitable for new utility rights-of-way and communication sites.

9A2-029 These watersheds are unsuitable for new special uses, except for research and outfitter-guide operations. Phase out existing non-conforming uses.

9A2-030 Allow commercial use by outfitters and guides if compatible with preservation of the reference watershed values. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps. Existing outfitter/guide operations are allowed to continue, but are monitored for impacts to watershed resources.

9A2-031 Do not allow contest events such as foot races or horseback endurance events.

9A2-032 Limit the size of commercial and organized groups to 10.

9A3 WATERSHED RESTORATION AREAS

This management prescription is allocated to approximately 1,700 acres (<1%) across the Jefferson National Forest. These prescription areas cover a broad spectrum of both large scale catastrophic natural disturbances and past land uses, like historic mining, where the dominate management focus for this planning period is on improving degraded water quality or soil productivity conditions. Consequently, a broad spectrum of restoration activities is needed and different management activities are appropriate. Watershed planning and analysis guides these activities.

Some of these areas are recent land acquisitions. New land acquisitions in the future may (although certainly not always) be allocated to this management prescription.

Table 3-3 Long-Term Management of Restoration Watersheds

Area Name	Current Condition	Long-Term Management Prescription
Davidson Tract	Recent land acquisition. Excessive erosion from roads.	8A1 and 9A1
Staley Creek	On-going restoration of historic mining area.	7E2
George's Branch	On-going restoration of historic mining area.	8C
Sand Pit	Recent land acquisition. Sand pit reclamation.	8C

EMPHASIS:

Management emphasis is on improving degraded water quality or soil productivity conditions. The long-term goal of these watersheds is to restore them to multiple use management. When this goal is achieved, these watersheds will be allocated to a different management prescription as displayed in Table 3.4.

DESIRED CONDITION:

Portions of these watersheds require active and ongoing soil and water rehabilitation work. Long-term these watersheds reflect the physical, chemical, and biological structure that sustain terrestrial, riparian, and aquatic species habitats. Water quality and soil productivity are restored or improving. Streambanks are vegetated and processes of abnormal downcutting have been reversed. Stream chemistry is recovering. Native aquatic species are becoming reestablished. Individual watershed restoration plans completed for each area will specify measurable indicators which trigger when the watershed is considered restored and can be allocated to its targeted management prescription (see Table 3-3).

In order to achieve these desired conditions, short-term measures such as resting a grazing allotment, planting trees, decommissioning roads/trails, or recontouring the land may be necessary. Possible management actions and appropriate mitigation measures are determined through local watershed planning and analysis. Channeled ephemeral stream zones within these watersheds are managed as part of the riparian corridor.

Sources of water and soil degradation are identified and mitigation or restoration plans developed.

Commercial timber harvest may be appropriate in the forested restoration watersheds to restore and maintain native forest communities and wildlife habitats, although the yield of wood products may not be predictable, depending on the restoration needs of the area. Timber harvest practices are modified to recognize the restoration needs of these watersheds.

The forested restoration watersheds are characterized by a predominance of mid- and late-successional forests with multiple canopy layers, which provide a variety of habitat niches and thermal and protective cover for wildlife. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. Snags used by birds, bats, and small animals are abundant. Dying and down trees are common, often in natural patches. Up to four percent of these forests are in early successional habitat conditions including: meadows, old fields, and openings created by flooding, wind damage, wildland fire, insect/disease infestations, or vegetation management activities. These areas frequently provide over 10 percent early successional habitat currently with a long-term goal of early successional habitat objective between 0 and 10 percent (or 100 percent in the case of pastoral areas) depending on the specific area. The specific objective by area will be designated in the individual area restoration plan.

Non-forested restoration watersheds are maintained in their pastoral landscape character unless watershed analysis dictates otherwise. Livestock grazing is frequently used to maintain these pastoral settings. These areas are used to demonstrate how landowners can improve stream and riparian resources within private pastures. These areas provide important old field habitat for a variety of early successional wildlife species.

The landscape character is natural appearing. These areas provide a variety of motorized and non-motorized recreation opportunities and experiences. Access is provided through portions of these areas on well-maintained Forest Service and State roads. Roads identified as problems are reconstructed, relocated, or decommissioned. Roads needed for vegetation management or special use maintenance are engineered to minimize soil and water impacts.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

STANDARDS

Water, Soil, and Air

9A3-001 Channeled ephemeral stream zones are managed as part of the riparian corridor.

9A3-002 Conduct watershed-specific analysis to determine standards needed to restore watershed conditions for each area. Watershed-specific analysis documentation need not be elaborate, but that necessary to accomplish the objectives.

Vegetation and Forest Health

9A3-003 Up to 4% of the acres can be in early successional habitat clustered on the landscape.

9A3-004 Wildlife and fish habitat improvements are allowed. Existing wildlife openings, pastoral areas, or old fields may be maintained. Expansion of existing openings and/or creation of new openings may occur. Maintenance methods may include cultivation, grazing, mowing, and burning. Use of native species will be emphasized.

Timber Management

9A3-005 Portions of these areas are classified as suitable for timber production. See Timber Suitability Map.

9A3-006 All even and uneven-aged silvicultural systems are allowed.

9A3-007 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Recreation

9A3-008 Existing trails are maintained. Identify soil and water problems and relocate, reconstruct, or decommission trails when needed.

9A3-009 Do not allow new designated OHV trails.

Appalachian National Scenic Trail

9A3-010 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

9A3-011 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Roads

9A3-012 Require roads analysis in conjunction with the watershed-specific analysis.

9A3-013 Roads identified as problems are reconstructed, relocated, or decommissioned.

9A3-014 New roads are engineered to mitigate impacts to water and aquatic resources and managed as closed to public motorized travel.

9A4 AQUATIC HABITAT AREAS

This management prescription is allocated to approximately 6,500 acres (1%) across the Jefferson National Forest. On the Jefferson National Forest, these areas include: Wolf Creek, Lynn Camp Creek, Craig Creek, and Stony Creek (all on the NRV Ranger District) and Potts Creek on the NRV and New Castle Ranger Districts.

EMPHASIS:

Aquatic habitat areas are managed to protect the habitats of specific threatened, endangered, sensitive, or locally rare aquatic species known to exist on national forest lands.

DESIRED CONDITIONS

Forest management activities within these areas are designed to protect habitat for threatened, endangered, and sensitive fish and mussels in streams adjacent to, or immediately downstream from, National Forest System lands. These lands and their associated streams reflect the physical, chemical, and biological structure that sustains exceptional aquatic diversity.

The aquatic species within these areas are secure or meeting recovery objectives. High quality aquatic habitat is capable of supporting sustained populations of aquatic species. Riparian corridors are maintained, restored, and enhanced to maximize high quality aquatic habitat. Channeled ephemeral stream zones are managed as part of the riparian corridor within these areas. These ecosystems are healthy and resilient to change. Management activities that concentrate sediment transport to streams or water bodies are mitigated and promptly rehabilitated to reduce impacts.

Significant potential sources of water quality degradation are identified and the susceptibility of the aquatic species to adverse impacts from these sources is determined. Existing roads, trails, developed and dispersed recreation sites, and areas of concentrated recreation use are examined and problems mitigated. Old mining, grazing, and agricultural areas are stabilized and rehabilitated where necessary. Beaver activity is assessed for adverse impacts to the aquatic community.

Uneven-aged forest communities with intermediate to high shade tolerance dominate the area. Natural processes will eventually result in a large patch old growth forest matrix throughout most of this area interspersed with occasional brushy and herbaceous openings or old fields. Snags used by birds, bats, and small animals are abundant. Dying and down trees are common, often in natural patches. Large woody debris within the riparian corridors meets Forestwide objectives.

These lands are classified as unsuitable for timber production. Commercial timber harvest is not appropriate within this prescription area except for salvage of hazard trees for public safety and/or aesthetics. Prescribed fire, integrated pest management, and felling of trees may be used to manage vegetation. Wildland fires are used to restore and maintain historic fire regimes. Wildlife openings may be maintained when compatible with the objectives to protect the habitat for the aquatic species of concern.

The landscape character is predominantly natural appearing. A broad spectrum of recreation opportunities exist within these areas including roaded natural with rural and pastoral enclaves along Stony Creek, Wolf Creek, Potts Creek and Craig Creek, and semi-primitive non-motorized opportunities within Lynn Camp Creek. Appropriate restroom and sanitation facilities are provided at all areas where recreationists tend to congregate. Portions of the Wolf Creek Picnic Area and Steel Bridge Campground are located in these

areas.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Access is provided through portions of these areas on well-maintained Forest Service and State roads. Roads identified as sources of water quality degradation are reconstructed, relocated, or decommissioned. Since aquatic habitat areas are often linear areas along major access roads, roads may be needed to cross through the area to access adjoining management prescription areas. Roads are engineered to prevent adverse impacts to aquatic species. Mountain bike and horse riders are limited to designated trails. Off-road vehicle use is prohibited to protect water quality and to maintain the non-motorized settings where they exist.

Reserved and outstanding mineral rights exist within one of these areas. Access and facilities necessary to exercise these rights are engineered to prevent adverse impacts to aquatic species and managed as closed to public travel. Federal oil and gas and other mineral leases contain controlled surface use stipulations to protect aquatic species habitat.

STANDARDS

Terrestrial and Aquatic Species

9A4-001 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife are maintained when compatible with the objectives to protect the habitat for the aquatic species of concern. New permanent wildlife openings are not created.

9A4-002 Stream habitat improvements are allowed to benefit threatened, endangered, sensitive, and locally rare aquatic species.

Vegetation and Forest Health

9A4-003 Non-native, invasive forest insect and disease outbreaks are controlled. Prohibit broadcast application of chemical pesticides. Use only biological control methods, like pheromone flakes, *Bacillus thuringiensis* var. *kurstaki* (Btk) are allowed.

9A4-004 When new, isolated infestations of non-native invasive plants are discovered, eradicate using approved hand-applied chemicals or physical means.

9A4-005 Allow prescribed fire, integrated pest management, and felling of trees to:

- Maintain existing wildlife openings and old fields;
- Provide for public health and safety;
- Maintain developed recreation facilities, including roads and trails;
- Maintain rare communities and species dependent on disturbance;
- Reduce fuel buildups; or
- Control non-native invasive vegetation.

Timber Management

9A4-006 These lands are unsuitable for timber production. Timber harvest is not allowed unless associated with reasonable access to valid existing rights or salvage of hazard trees for public safety and/or aesthetics.

Prescribed Fire and Wildland Fire Use

9A4-007 Prescribed fire and wildland fire use are allowed to reduce fuel buildups, maintain pastoral settings and to restore forest communities that contribute to soil and water restoration and improvement.

9A4-008 Use the least ground disturbing method of fireline construction, favor blacklines and handtools. Revegetate and water bar firelines as quickly as possible.

Recreation

9A4-009 Existing trails are maintained. Identify soil and water problems and relocate, reconstruct, or decommission trails when needed.

9A4-010 These areas are unsuitable for OHV/ATV routes or ATV use areas.

Appalachian National Scenic Trail

9A4-011 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

9A4-012 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

Range

9A4-013 Grazing is prohibited within these areas.

Minerals

9A4-014 These areas are available for federal oil and gas leasing with a controlled surface use stipulation to protect aquatic habitat. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the threatened, endangered, sensitive, and locally rare species resources and values.

9A4-015 These areas are not available for mineral materials for commercial or personal, purposes. Administrative or free use of mineral materials is allowed when: a) the materials are used within the area itself; and b) use is necessary to protect the threatened, endangered, sensitive, and locally rare species resources and values.

Roads

9A4-016 Motorized vehicles are restricted to designated roads and parking areas.

9A4-017 Road construction or reconstruction are informed by a watershed-scale or site-specific road analysis.

9A4-018 Road construction and reconstruction are allowed to provide visitor access and manage resources provided negative effects to threatened, endangered, sensitive, or locally rare aquatic species can be improved or mitigated.

9A4-019 Roads identified as problems are reconstructed, relocated, or decommissioned.

Lands and Special Uses

9A4-020 These river and stream segments are unsuitable for new dams unless negative effects to threatened, endangered, sensitive, or locally rare aquatic species can be mitigated.

General

9A4-021 Any human caused disturbances or modifications that may concentrate runoff, erode the soil, or transport sediment to the channel or water body are rehabilitated or mitigated to reduce or eliminate impacts. Channel stability of streams is protected during management activities.

9A4-022 Management activities expose no more than 10 percent mineral soil within the project area.

9F RARE COMMUNITIES

This management prescription is allocated to approximately 7,400 acres (1%) across the Jefferson National Forest. All known rare community sites, and lands surrounding them appropriate for protection of the rare community, are allocated to this prescription. As new rare community sites are found, they will be added to this prescription through the Forest Plan amendment process. Descriptions of the Rare Communities found on the Jefferson National Forest can be found in Appendix E.

EMPHASIS:

Rare communities are assemblages of plants and animals that occupy a small portion of the landscape, but contribute significantly to plant and animal diversity. Rare communities, wherever they occur on the Forest, are managed under this prescription to ensure their contribution to meeting goals for community diversity, endangered and threatened species recovery and providing habitat for sensitive and locally rare species. These lands serve as core areas for conservation of the most significant elements of biological diversity identified to date on the Forest. The emphasis of designation and management of these areas are designed: (1) to perpetuate forest communities that are rare at the scale of their ecological Section or Subsection unit; and (2) to perpetuate or increase existing individual plant or animal species that are of national, regional, or state significance as identified on threatened, endangered, sensitive, and locally rare species lists.

DESIRED CONDITION:

Rare communities exhibit the composition, structure, and function necessary to support vigorous populations of species characteristic of the community, including relevant federally listed threatened and endangered species, and other species at risk. Ecological disturbances are at the frequency and intensity needed to maintain these conditions; however, in some cases environmental factors have changed to the extent that natural processes are prevented or hindered from maintaining the community. In these cases, management activities used to restore or maintain desired conditions, such as prescribed burning, timber harvest, or integrated pest management may be evident. Wildland fires are used to restore and maintain historic fire regimes whenever possible. Beyond restoration and maintenance activities, human-caused alteration of rare communities is

not evident. Signs and barriers may limit recreational access where necessary to protect community integrity. Interpretive signs or other information may be available where it is likely to promote public knowledge of rare communities and improve community protection.

These natural evolving or natural appearing areas are characterized by a variety of forested and non-forested communities generally being affected more by the forces of nature than by humans. Late successional to old growth forest communities currently exist in some of these areas and additional acres develop in future years.

All areas are protected from human-caused detrimental habitat change, the taking of threatened or endangered species, and the collection of living plants or animals unless such collections are for the purpose of achieving the stated management goals. Recreational access is limited to existing roads and trails generally outside the perimeter of the area. New trail sections to link existing trails or for education and interpretation is considered on a case-by-case basis. Recreation opportunities are limited to interpretation, bird watching, wildlife viewing, nature photography, and hiking, biking, and horseback riding.

Some rare communities are found within the foreground the Appalachian National Scenic Trail. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

These sites can be nominated for placement on States' registries of natural areas. These voluntary agreements recognize the protection and management of natural areas that support rare species and significant natural communities.

OBJECTIVES

9F-OBJ1 Based on periodic monitoring of known rare community sites, identify management activities needed to maintain or restore characteristic structure, composition, and function of these communities, and implement an annual program of work designed to meet these needs.

STANDARDS

General

9F-001 Protect rare communities from any detrimental effects caused by management actions. Site-specific analysis of proposed management actions will identify any management measures needed in addition to Forest Plan standards.

9F-002 Management activities occur within rare communities only where maintenance or restoration of rare community composition, structure, or function is expected (except for beaver ponds—see below).

Terrestrial and Aquatic Species

9F-003 Existing openings or old fields are only maintained or created if they are compatible with the rare community.

9F-004 Control measures such as exclosures or trapping may be used where animal populations are adversely affecting rare communities.

9F RARE COMMUNITIES

9F-005 Beaver ponds and associated wetlands are managed in association with threatened, endangered, sensitive, and locally rare species. They are protected as rare communities when they support significant populations of these species or otherwise on a case-by-case basis. Other beaver populations and dams may be managed to: prevent adverse effects to public safety; roads, trails, and other facilities; private land resources; and other rare communities. Where protection of beaver ponds and associated wetlands are in conflict with other resource needs, decisions consider the beavers' role in natural processes and are based on the relative rarity of the communities and associated species involved, with the rarest elements receiving priority.

Rare Communities and Old Growth

9F-006 When needed to maintain community composition, structure, or function, control encroaching vegetation in bogs and seasonal ponds.

9F-007 Prohibit new plow lines for containing prescribed burns in or near bogs and seasonal ponds to avoid disrupting hydrology. Use existing roads, firelines, or streams to contain the burn where possible. Where necessary, construct new firelines by less intensive methods such as wetline and cutting back flashy fuels. Handline may be used when it is the only option available.

Vegetation and Forest Health

9F-008 Control non-native invasive species (plants, animals, insects, and diseases) where they are causing negative effects to rare communities. Do not introduce non-native species in or near rare communities, unless it is a natural enemy of an non-native pest.

9F-009 Allow native insects and diseases to play their natural ecological role.

9F-010 Removal of dead and down logs or other woody debris in rare communities is prohibited. Where needed to ensure public or employee safety, snags may be felled, but will be retained within the community as downed wood.

9F-011 Carolina hemlock will not be cut or treated during vegetation management activities in order to maintain future restoration opportunities. Exceptions may be made where needed to provide for public and employee safety, protection of private resources, insect and disease control, or research.

9F-012 Allow vegetation management activities to:

- Maintain and improve threatened, endangered, sensitive, and locally rare species habitat;
- Maintain rare communities and species dependent on disturbance;
- Reduce insect and disease hazard;
- Control non-native invasive vegetation;
- Maintain, enhance, or restore the diversity and complexity of native vegetation;
- Reduce fuel buildups.

Timber Management

9F-013 These lands are unsuitable for timber production. Timber harvest is appropriate within disturbance dependent rare communities when it is not possible to use natural processes or prescribed fire.

Non-timber Forest Products

9F-014 Do not issue authorizations for collection of flora from rare communities, except for approved scientific purposes. Hunting and fishing are allowed.

Wildland Fire Suppression

9F-015 Firelines constructed with heavy equipment are avoided whenever possible during wildland fire suppression.

Prescribed Fire and Wildland Fire Use

9F-016 Do not construct fire lines with heavy mechanized equipment (e.g. bulldozers and tractors) in rare communities when preparing for prescribed fire, unless necessary to benefit or enhance the rare community (e.g. table mountain pine community).

9F-017 Basic mesic forests are excluded from prescribed burning blocks where this can be accomplished without large increases in fireline construction. When necessary to include mesic deciduous forests within burning blocks, direct firing will not be done within these communities unless necessary to secure control lines. In these cases, only low intensity fires are allowed.

Recreation

9F-018 Where recreational uses are negatively affecting rare communities, modify recreation sites or trails to reduce or eliminate negative effects. New recreational developments are designed to avoid negative effects to rare communities.

9F-019 These areas are unsuitable for designation of new OHV routes or ATV use areas, unless crossing the area is the only feasible alternative or results in less environmental impact.

Appalachian National Scenic Trail

9F-020 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

9F-021 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

9F-022 A short-term SIO of enhancement or rehabilitation may be used where there is a need.

Range

9F-023 Livestock grazing is allowed within balds, high elevation grasslands, and other rare communities where this type of vegetation management is beneficial to maintain these areas.

Minerals

9F-024 Rare communities are available for federal oil and gas leasing with a no surface occupancy stipulation to protect threatened, endangered, sensitive, and locally rare species. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the rare community.

9F-025 These areas are not available for mineral materials for commercial or personal purposes. Administrative or free use of mineral materials is allowed when: a) the materials are used within the rare community itself; and b) use is necessary to protect the rare community and threatened, endangered, sensitive, and locally rare species habitats.

9F-026 Federal oil and gas leases and reserved and outstanding mineral rights exist in some of these areas. Roads, wells, and other necessary infrastructure associated with these leases and rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance to threatened, endangered, sensitive, and locally rare species habitat.

Roads

9F-027 Only permit road construction to access valid existing rights and mineral leases, or if entering the rare community to access an adjacent area results in less environmental impact. Road reconstruction and minor relocation are permitted after full consideration of effects on the rare community and associated species.

9F-028 New roads are engineered to minimize impacts to the rare community and managed as closed to public motorized travel.

Lands and Special Uses

9F-029 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Existing uses may continue after evaluation of the impacts to the rare community.

9F-030 Allow commercial use by outfitters and guides if compatible with preservation of the rare community values. Do not allow contest events such as foot races or horseback endurance events. Require outfitters and guides to use leave-no-trace techniques. Do not allow permanent camps.

9F-031 Limit the size of commercial and organized groups to 10.

9G1 MAINTENANCE AND RESTORATION OF BOTTOMLAND HARDWOODS

This management prescription is allocated to approximately 100 acres (< 1%) across the Jefferson National Forest. These forests occur mostly in the floodplains of major rivers and their tributaries within broad floodplains. Consequently, these community types rarely occur on the Jefferson National Forest. We have identified them due to their importance for several neotropical migrant bird species whose declining populations make them of particular concern.

EMPHASIS:

Emphasis is primarily on maintenance of bottomland hardwood forest communities with limited opportunities for restoration. Restoration activities are focused on reforestation of non-forest areas.

DESIRED CONDITION:

9G1 MAINTENANCE AND RESTORATION OF BOTTOMLAND HARDWOODS

The Eastern Riverfront Hardwood community is extremely limited in acreage on the Jefferson National Forest. Included forest types are: river birch, sycamore, cottonwood, and black walnut. The river birch/sycamore type is typically a narrow 'stringer' on each bank of large streams. Cottonwood and black walnut types have usually been planted on alluvial flats, which were in a non-forest land use when they were first acquired. The primary natural disturbance agents are periodic flooding, bank sloughing, and beaver feeding—streams are too large to be dammed by beaver. Included species are typically intolerant. The reproductive strategy for these intolerant species is typically seedling establishment on flood-deposited sediments or on water-scoured banks.

The River Floodplain Hardwood Forest Community includes bottomland hardwood, yellow pine, yellow poplar, black ash, American elm, red maple, swamp chestnut oak, cherrybark oak, nuttall oak, willow oak, sugarberry, American elm, green ash, laurel oak, willow oak, overcup oak, and water hickory. Each of these types is associated with riparian areas. Tolerance of species ranges widely, from very tolerant for red maple to very intolerant for yellow pine but the majority of species are intolerant. This community is adapted to flooding as a natural disturbance.

The bird communities of the bottomland hardwood forests are quite diverse (Smith and others 1996) and include numerous species in both the spring and summer breeding season and in the winter nonbreeding season (Hamel 1992). Many of these birds are Neotropical migratory species whose declining populations make them of particular concern at the present time (Hunter and others 1993,Smith and others 1996).

Management of these areas is focused on maintaining current forests and preventing further conversion to other uses, as well as reclamation of some previously converted land to forest.

A knowledge of stand development and replacement patterns on bottomland hardwood sites is important for long-term success of restoration projects. In addition to the kinds of overstory disturbances and plant-mediated responses as occur in uplands, bottomland sites change over time by deposition of sediment and meandering of the river. When flooding frequency diminishes, sedimentation ceases, soils begin to mature, and the site begins to function more like a terrace than a ridge. Species adapted to better drained conditions, such as cherrybark oak, pin oak, and swamp chestnut oak, will appear.

Eastern cottonwood is a temporary, pioneer species that establishes itself wherever moist, bare soil is available, such as on newly made sandbars or flood-scoured ridges and flats on the first bottoms. It may occur together with willow and eventually become dominant unless frequent and extended flooding favors the willow. As soils build up and willow and cottonwood drop out, succession passes to sycamore, American elm, and green ash. Understory species consist of greenbrier, trumpet creeper, stinging nettle, and grape. Herbs may or may not be present, depending on how dense the overstory is and how long floodwaters cover the ground during the growing season.

Swamp chestnut and cherrybark oak occur on the highest terraces on more mature sandy loam soils. These sites are seldom covered with standing water. Painted buckeye, flowering dogwood, and eastern redbud frequently occur in the understory.

Since these sites occur along large creeks and rivers, access is provided on state roads. Recreation opportunities are limited due to the wet conditions and dense understory. Opportunities exist for bird watching, wildlife viewing, and nature photography. The landscape character of these areas is natural appearing.

STANDARDS

Standards for Management Prescription 11 – Riparian Corridors apply to this management prescription.

9H MANAGEMENT, MAINTENANCE AND RESTORATION OF FOREST COMMUNITIES

This management prescription is allocated to approximately 24,700 acres (3%) across the Jefferson National Forest. Forest community types in the Jefferson National Forest are influenced by bedrock geology, soils, slope position, aspect, and disturbance history. Consequently, many various community types are represented within a single watershed or landtype association. Allocation of these prescription areas focused on areas where southern yellow pine communities and the drier oak and oak-pine mixed communities predominate.

EMPHASIS:

The emphasis of this management prescription is to restore and maintain the potential natural vegetation predicted as most likely to occur in each landtype and landtype phase based on ecological potential.

DESIRED CONDITIONS

Lucy Braun broadly described the natural vegetation of the Jefferson National Forest in 1950 as part of the Oak-Chestnut Forest. Because of its climatic variability and diversity of soils weathered from different substrates, western Virginia supports an array of oak, oak-hickory, oak-pine, pine, and mixed mesophytic forest communities. This mix of plant associations are maintained, enhanced, and restored within this prescription area. The gradual reduction in distribution and/or abundance of southern yellow pine communities, particularly Table Mountain and pitch pine is reversed, reclaiming those portions of the landscape where they have been replaced by oaks and white pine. At the scale of an entire watershed, variations in forest communities along an ecological gradient (different aspects, slope positions, and soil types) are evident to the untrained observer. Reproductive potential, growing space, light, nutrients, water, and recent disturbances present at any point in the life of each forest community results in the natural sustainability of those communities that occur in any given ecological unit.

The landscape character of this area retains a natural, forested appearance interspersed with some forest communities greater than 100 years of age and herbaceous openings, providing a diversity of scenery and wildlife habitat. Plant associations within this prescription have a range of 4 to 10% of its area per decade in the early successional class. Structural diversity within mixed mesophytic and dry-to-mesic oak forest communities is enhanced through commercial and non-commercial vegetation management activities. This prescription area is a mix of lands suitable and unsuitable for timber production. Portions of the area, including riparian areas, areas of low productivity like shale barrens, and lands where commercial timber harvest is uneconomical, are managed by natural processes and prescribed fire and will contribute to the older aged forest component across the prescription area. The resulting landscape structure of this allocation provides a forest matrix appropriate for linking large- and medium-sized old-growth patches across the landscape. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Prescribed fire plays an important role in the maintenance of many of the forested communities found throughout this management prescription. Prescribed fire is frequently used to encourage oak sprouting and reduce competition from more shade

Table 3-4. Reference Communities Identified by the Virginia Department of Natural Heritage

VA-DNH Forest Vegetation Types	Reference Community
Rich Cove and Slope forests	Cliff Mountain, Clinch RD Glenwood –Pedlar RD, widespread in coves
Acidic Cove forests	Catawba Mountain, New Castle RD Salt Pond Mountain, New River Valley RD
Eastern Hemlock forests	Little Wolf Creek, New River Valley RD Sunset Fields, Glenwood –Pedlar RD
Dry-Mesic Calcareous forests	Blowing Springs, Warm Springs RD
Basic Oak-Hickory forests	James River Face Wilderness, Glenwood RD
Acidic Oak-Hickory forests	Sprouts Run, Glenwood RD
Montane Oak-Hickory forests	Potts Mountain (upper north slope), New River Valley RD Apple Orchard Falls, Glenwood RD
Mixed Oak/Heath and Chestnut Oak forests	Pine Mountain, Glenwood –Pedlar RD Peters Mountain North, James River RD
Eastern White Pine- Hardwood Forests	Upper south and west slope of Chimney Rocks, Warm Springs RD
Pine-Oak/Heath Woodlands	Bald Mountain, New Castle RD
Montane Acidic Woodlands	Suber Barrens, New Castle RD
Piedmont/Mountain Basic Woodlands	Narrows Natural Area, Nature Conservancy Wildcat Mountain, Glenwood RD
Montane Dry Calcareous Forests and Woodlands	Stone Mountain, Clinch RD
Southern Appalachian Northern Hardwood Forests	Iron Mountain (high elevation north slopes, Mount Rogers NRA
Central Appalachian Northern Hardwood Forest	Potts Mountain (high elevation north slopes), Blacksburg RD
Southern Appalachian High Elevation Rich Cove Forest	Thunder Hill (north slopes), Glenwood RD
High Elevation Acidic Cove Forest	High Knob, Clinch RD
Northern Red Oak Forest	War Spur Branch, New River Valley RD Bedford County, Glenwood RD

tolerant species, to restore and maintain threatened and endangered species habitats, and to ensure the continued presence of fire-dependent southern yellow pine ecosystems. Prescribed fire and commercial timber harvest are employed to maintain the diversity of age, structure, and species composition of forest communities across the landscape.

Wildlife species associated with both early-successional and mid- to late-successional deciduous forest habitats, as well as an abundance of game species are expected to inhabit this area. The protection and management of old growth forests, other rare communities, and threatened, endangered, sensitive, and locally rare species are also an important feature within these areas.

The spatial distribution of forest communities across the landscape is based on current and historic vegetation records, potential natural vegetation, and the experience of local forest managers. Species composition and structure of forest communities are based on identified reference communities and the preliminary classification and description of vegetation types done by the Virginia Department of Conservation and Recreation Division of Natural Heritage (VA-DNH). The broad forest vegetation types represented and their specific desired conditions are listed in Table 3-4.

The recreation experience in this area is not considered remote, although open road densities are fairly low (less than 1.25 miles per 1000 acres). Access is provided through portions of the area on Forest Service and State roads with a gravel or native surface. Roads may occasionally be paved. Unlicensed off-road vehicles use may occasionally occur on designated trails in the area, but is generally discouraged to provide wildlife habitat security. Challenging opportunities may exist for high-clearance and 4-wheel drive vehicles on open roads.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

Forest visitors on foot, horse, or bikes may experience some solitude in portions of this prescription area where roads are managed as closed, but feelings of challenge and risk are not expected. Comfort, sanitation, and camping facilities are not provided, although primitive camping can be enjoyed throughout the area. During most of the year, occasional encounters with other forest visitors can be expected, however these encounters are more frequent during spring and fall hunting seasons. This area provides excellent opportunities for wildlife viewing and hunting.

STANDARDS

Terrestrial and Aquatic Species

9H-001 Limit creation of early-successional forest habitat to ten percent of forested acres (based on the contiguous prescription area).

9H-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

9H-003 Favor the retention of large (>20” d.b.h.) standing snags and den trees when implementing silvicultural treatments.

Vegetation and Forest Health

9H-004 4-10 percent of the prescription area consists of a dispersed system of transitory openings created through vegetation management activities.

9H-005 Maintain and restore southern yellow pine forest communities through artificial or natural regeneration.

9H-006 Regenerate pine-hardwood forest types artificially or naturally to mixed pine-hardwood stands of native species to retain the pine component.

9H-007 Proactively manage species composition and tree vigor in stands at a level that reduces susceptibility to damage from insect and disease infestations and other forest health problems like oak decline. Suppress native and non-native insects and diseases using an integrated pest management approach.

Timber Management

9H-008 These areas are suitable for timber production.

9H-009 Regeneration harvest areas are primarily coppice with reserves with 15- 25 square feet of basal area per acre left to ensure adequate sunlight for oak regeneration.

9H-010 Thinning and group selection silvicultural systems are designed to result in forest structure and composition consistent with late-successional deciduous forest conditions over the long-term. Clearcut harvest systems occur when necessary to achieve specific forest regeneration objectives.

9H-011 Regeneration units range from 2 to 40 acres in size.

9H-012 Regeneration harvest areas may occupy up to 16 percent of a project analysis area in order to provide 4-10 percent of an individual contiguous management prescription area in early successional forest habitat conditions and to cluster these conditions on the landscape.

9H-013 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	120-140
Cove hardwoods	100-120
White pine	80-100
Yellow pine	80-100
Scarlet oak/Black oak	80-100

Non-timber Forest Products

9H-014 Commercial and personal use firewood collection is allowed.

Prescribed Fire and Wildland Fire Use

9H-015 Management-ignited prescribed fire, wildland fire use, and mechanical treatments are allowed to: perform site preparation; reduce wildland fire potential due to high fuel loadings; manage vegetation; maintain or enhance wildlife habitats; and to benefit fire dependent communities.

Appalachian National Scenic Trail

9H-016 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

9H-017 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	M	M	M	M	M

10B HIGH QUALITY FOREST PRODUCTS

This management prescription is allocated to approximately 16,200 acres (2%) across the Jefferson National Forest.

EMPHASIS:

This prescription is applied to lands capable of producing high quality valuable sawtimber. Timber stand improvement and regeneration harvest methods are applied that best provide for the growth and harvest of high quality, valuable sawtimber that is most in demand in the marketplace. Other forest products such as pulpwood, fuelwood, and low value sawtimber are provided as result of timber stand improvement to cultivate high quality, valuable sawtimber. Opportunities are also provided for other high value forest products.

DESIRED FUTURE CONDITION

These lands are managed for a balanced age-class distribution of forest stands containing native tree species capable of sustained, high value timber production. These forested communities contain a wide diversity of tree species that receive periodic vegetation management through commercial timber sales to initiate regeneration processes and/or maintain tree growth and vigor. Management activities are spatially distributed and timed to minimize adverse impacts on wildlife, soil, water, recreation, and scenery in a cost-efficient manner.

The landscape character is natural appearing with associations of deciduous and mixed hardwood-pine upland forest communities and rich cove hardwood communities. Other pine and conifer forest community types make up a smaller proportion of the area. The mix of forest community types depends upon the landtype associations in which this prescription is applied. Large stemmed trees interspersed with canopy gaps and 10 - 40 acre transitional openings provide moderate to high scenic diversity. Where uneven-aged cutting methods are used, forest communities of large, contiguous blocks of gently sloping, roaded land are best suited to cost efficient management. There will be a gradual shift from shade-intolerant to shade-tolerant tree species within these forest communities.

A mix of forest successional stages characterizes these areas, with an emphasis on early-successional forests. 10 to 16 percent of forested land may be in early-successional forest conditions, mid- and late-successional forests are common. Early-successional forest patches created by management actions may occur in patches of 2 to 40 acres, and may be clustered or scattered across the landscape. Some characteristics of older aged forest communities and habitat conditions may be provided towards the end of rotation in both even- and uneven-aged forest stands; however, these communities are available for harvest in order to provide the high quality, valuable forest products emphasized in this prescription. Roads through the area are designed to facilitate timber removal and protect water quality.

Wildlife species associated with early successional forest habitats and mixed landscapes expected to inhabit these areas include: eastern towhee, white-eyed vireo, least weasel, whip-poor-will, and orchard oriole. This management prescription also provides suitable habitat for ruffed grouse, eastern wild turkey and black bear. These areas provide excellent opportunities for wildlife viewing and hunting.

Forest product commodity outputs contribute to the social and economic well being of the people living in the area and help maintain a way of life long associated with those living within the area. Timber harvesting is apparent and uses sale layout and design to

accommodate visual considerations through innovative harvesting techniques and sale layout.

Growth capability of suitable land is used at a high level, but well within the biological capabilities for sustained yield production. A balanced age-class distribution is achieved over time with most of the area having stands within the prescribed rotation lengths. Native forest insects and diseases are kept within acceptable levels using Integrated Pest Management techniques. Impacts to vegetation from non-native forest pests, like gypsy moth, are minimized through judicious use of chemical and biological controls, silvicultural treatments, and timely salvage of damaged trees.

Roads through the area provide recreation opportunities for both OHV and sedan travel. These areas provide a variety of motorized and non-motorized recreation opportunities including hunting, fishing, hiking, bicycling, berry picking, dispersed camping, driving for pleasure, and viewing scenery and wildlife. Management activities may be visually evident in portions of these areas.

STANDARDS

Terrestrial and Aquatic Species

10B-001 Limit creation of early-successional forest habitat to sixteen percent of forested acres (based on the contiguous prescription area).

10B-002 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. New transitory wildlife habitat openings are created as a result of timber management activities. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

10B-003 Favor the retention of large (>20” d.b.h.) standing snags and den trees when implementing silvicultural treatments.

Rare Communities and Old Growth

10B-004 Old growth patches are not provided for in this prescription area.

Vegetation and Forest Health

10B-005 10-16 percent of the prescription area consists of a dispersed system of transitory openings created through forest management activities.

10B-006 Proactively manage species composition and tree vigor in stands at a level that reduces susceptibility to damage from insect and disease infestations and other forest health problems like oak decline. Suppress native and non-native insects and diseases using an integrated pest management approach.

10B-007 Assure salvage is rapid, complete, and emphasizes marketing timber before its value decreases.

Timber Management

10B-008 These areas are suitable for timber production.

10B-009 Regeneration harvest areas are primarily coppice with reserves with 15 – 25 basal area per acre left to ensure adequate sunlight for oak regeneration.

10B-010 Thinning is frequently used to increase volume production and tree vigor and manage species composition. Uneven-aged management, using group selection, may be employed to reduce impacts to scenery.

10B HIGH QUALITY FOREST PRODUCTS

11 RIPARIAN CORRIDORS

10B-011 Regeneration units range from 5 to 40 acres in size.

10B-012 Regeneration harvest areas may occupy up to 20 percent of a project analysis area in order to provide 10-16 percent of an individual contiguous management prescription area in early successional forest habitat conditions.

10B-013 Manage regeneration harvest areas with the following rotation ages:

Upland hardwoods	80-100
Cove hardwoods	70-90
White pine	60-80
Yellow pine	60-80
Scarlet oak/Black oak	60-80

Non-timber Forest Products

10B-014 Commercial and personal use firewood collection is allowed.

Wildland Fire Suppression

10B-015 A full range of suppression strategies are employed to protect timber resources.

Prescribed Fire and Wildland Fire Use

10B-016 Prescribed fire and/or mechanical fuel treatments are used for site preparation, to promote natural regeneration, reduce wildland fire potential due to high fuel loadings, manage vegetation, maintain or enhance wildlife habitats, and to benefit fire dependent communities.

Scenery

10B-017 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	M	L	L	L	L	L

11 RIPARIAN CORRIDORS – STREAMS, LAKES, WETLANDS, AND FLOODPLAINS

This management prescription is allocated to approximately 73,600 acres (10%) across the Jefferson National Forest.

Riparian Areas are functionally defined as areas with three-dimensional ecotones of interaction that include both terrestrial and aquatic ecosystems. They extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain into the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width[7]. (For an operational definition of a riparian area based on soils, vegetation, and hydrologic characteristics see Appendix "C".) A *riparian corridor* is a management prescription area designed to include much of the Riparian Area. Within the riparian corridor management prescription area, management practices are specified to maintain riparian functions and values. As a management prescription area, this includes corridors along all defined perennial and intermittent stream channels that show signs of scour, and around natural

[7] Ilhardt, B.L., E.S. Verry, and B.J. Palik. 2000. Defining riparian areas. Pages 23-42 in E.S. Verry, J. W Hornbeck, and C. A. Dolloff (editors) Riparian management in forests in the continental eastern United States. Lewis Publishers, New York. 402pp.

ponds, lakeshores, wetlands, springs, and seeps. (See Appendix "C" for a graphical representation of a riparian corridor.)

EMPHASIS:

Riparian corridors are managed to retain, restore, and/or enhance the inherent ecological processes and functions of the associated aquatic, riparian, and upland components within the corridor. Primarily, natural processes (floods, erosion, seasonal fluctuations, etc.) modify most of the areas within the riparian corridor. However, management activities may be used to provide terrestrial or aquatic habitat improvement, favor recovery of native vegetation, control insect infestation and disease, comply with legal requirements (e.g. Endangered Species Act, Clean Water Act), provide for public safety, and to meet other riparian functions and values. Silvicultural treatments including timber and vegetation removal may occur to restore and/or enhance riparian resources such as water, wildlife, and natural communities.

DESIRED CONDITION

Riparian corridors reflect the physical structure, biological components, and ecological processes that sustain aquatic, riparian, and associated upland functions and values. The preferred management for riparian corridors is one that maintains, or moves toward, the restoration of processes that regulate the *environmental and ecological components of riparian areas*. However, due to the high value that these areas have for many uses, evidence of human activity (developed recreation areas, roads and trails, dams and reservoirs, and pastoral areas) may be present.

Riparian corridors are managed to emphasize the maintenance, restoration, and enhancement of habitat for species that depend on riparian resources for at least a part of their life-cycle. Management may also occur to maintain, restore, or enhance habitat for other species that benefit from riparian resources as long as the needs of species that depend on riparian resources for at least a part of their life-cycle are met.

The soils of riparian corridors have an organic layer (including litter, duff, and/or humus) of sufficient depth and composition to maintain the natural infiltration capacity, moisture regime, and productivity of the soil (recognizing that floods may periodically sweep some areas within the floodplain of soil and vegetation). 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. Any human-caused disturbances or modifications that cause environmental degradation through concentrated runoff, soil erosion, or sediment transport to the channel or water body are promptly rehabilitated or mitigated to reduce or eliminate impacts.

Trees within the corridors are managed to provide sufficient amounts and sizes of woody debris to maintain habitat complexity and diversity for aquatic and riparian wildlife species. Recruitment of woody debris typically occurs naturally; however, woody debris may be purposefully introduced to enhance aquatic and terrestrial habitat. Both in-stream and terrestrial woody debris are regarded as essential and generally left undisturbed.

The riparian corridor functions as a travel-way for aquatic and terrestrial organisms. The corridor serves as a connector of habitats and populations allowing gene flow to occur, thus keeping populations genetically viable. Stream structures -- such as bridges, culverts, and aquatic habitat improvement structures -- may be evident in some streams and water bodies. With the exception of some dams, most structures do not decrease in-stream connectivity.

11 RIPARIAN CORRIDORS

Suitable habitat is provided in the riparian corridor for riparian flora and fauna; especially threatened, endangered, sensitive (TES) and locally rare species. Vegetation (dead and alive) reflects the potential natural diversity of plant communities with appropriate horizontal and vertical structure needed to provide the shade, food, shelter, and microclimate characteristics for aquatic and terrestrial species. Rehabilitation of past and future impacts (both natural and human-caused) may be necessary to protect resource values and facilitate recovery of riparian structure and functions.

Vegetative communities within the riparian corridor are diverse and productive, providing for a rich variety of organisms and habitat types. The vegetative community within the riparian corridor is predominately forested; however, some native non-forested communities such as wet meadows and grass or shrub dominated plant communities may occur. The desired vegetative condition of non-forested communities is determined by site-specific analysis.

The forest contains multiple canopy layers, which provide diverse habitat structure, and thermal and protective cover for wildlife. Snags used by birds, bats, and other small animals are abundant. Dying and down trees are common, often in naturally occurring patches. Wet meadows, non-forest communities, and open forest canopies, created by flooding, wind damage, wildland fire, insect infestations, disease, restoration, and vegetation management may be seen.

Vegetation management activities are stratified into two sections of the riparian corridor. The core of the corridor is the area within 100 feet each side of perennial streams, lakes, ponds and wetlands and the area within 50 feet each side of intermittent streams. Within the core of the riparian corridor, vegetation management activities, including prescribed fire, may take place to maintain, restore, and/or enhance the diversity and complexity of native vegetation, rehabilitate both natural and human-caused disturbances, and provide habitat improvements for aquatic and riparian- associated wildlife species (including migratory birds), provide for visitor safety, or to accommodate appropriate recreational uses. Silvicultural treatments, including timber and vegetation removal, may occur within the riparian corridor, but the corridor will be classified as not suitable for timber production.

When slopes exceed ten percent the riparian corridor is extended beyond the core area. Within this extended portion of the corridor vegetation management activities may take place to meet the objectives of the adjacent management prescription. However, these activities will be constrained by the standards in this riparian corridor prescription. Silvicultural treatments, including timber and vegetation removal, may occur within the extended section of the corridor. This extended section of the corridor can be classified as suitable for timber production if the adjacent management prescription is suitable. Prescribed fire can be used within the corridor to create or maintain the composition and vitality of fire-dependent vegetative communities.

The landscape character is natural evolving or natural appearing, but occasional enclaves of a rural landscape character may occur with pastoral settings and recreation developments (such as a swim beach at a campground). Livestock grazing may occur, but it is managed to minimize impacts on stream banks, water quality, and other riparian resources.

Both dispersed and developed recreation opportunities may be present within these corridors. Although recreational areas and facilities may create long-term impacts on riparian corridors, allowances are made in this prescription since a majority of recreation within the national forests occurs in or near water bodies. Hiking, dispersed camping, hunting, and fishing are typical activities available within the corridor. Visitors may encounter developed camping areas, boat launches and fishing piers. Current recreation areas and facilities are managed to minimize impacts on stream banks, shorelines, and

water quality. New recreation facilities will be developed in accordance with Executive Orders 11988 and 11990 to minimize impacts on the riparian resource. Environmental education and interpretation about the aquatic component and riparian corridor may be provided to increase awareness of the value of riparian resources.

DESIRED CONDITIONS FOR AQUATIC SYSTEMS WITHIN THE RIPARIAN CORRIDOR

Streams are in dynamic equilibrium; that is, stream systems normally function within natural ranges of flow, sediment movement, temperature, and other variables. The geomorphic condition of some channels may reflect the process of long-term adjustment from historic watershed disturbances (e.g., past intensive farming or logging practices). The combination of geomorphic and hydrologic processes creates a diverse physical environment, which, in turn, fosters biological diversity. The physical integrity of aquatic systems, stream banks and substrate, including shorelines and other components of habitat is intact and stable. Where channel shape is modified (e.g., road crossings), the modification preserves channel stability and function.

The range of in-stream flows is maintained to support channel function, aquatic biota and wildlife habitat, floodplain function, and aesthetic values. Water uses and other modifications of flow regimes are evaluated in accordance with the national Forest Service in-stream flow strategy and site-specific analysis.

Water quality remains within a range that ensures survival, growth, reproduction, and migration of aquatic and riparian wildlife species; and contributes to the biological, physical, and chemical integrity of aquatic ecosystems. Water quality meets or exceeds State and Federal standards. Water quality (e.g.: water temperature, sediment level, dissolved oxygen, and pH) will be improved where necessary to benefit aquatic communities.

Floodplains properly function as detention/retention storage areas for floodwaters, sources of organic matter to the water column, and habitat for aquatic and riparian species. Modification of the floodplain is infrequent but may be undertaken to protect human life and property or to meet other appropriate management goals (e.g., restoration). There may be evidence of some roads, trails, and recreation developments. Some wetland habitats may show signs of restoration.

The biological integrity of aquatic communities is maintained, restored, or enhanced. Aquatic species distributions are maintained or are expanded into previously occupied habitat. The amount, distribution, and characteristics of aquatic habitats for all life stages are present to maintain populations of indigenous and desired nonnative species. Habitat conditions contribute to the recovery of species under the Endangered Species Act. Species composition, distribution, and relative abundance of organisms in managed habitats is comparable to reference streams of the same region. Some streams and lakes, however, may be stocked with non-native fish by the respective State natural resource agency.

STANDARDS

Standards refer to the entire riparian corridor (core and extended area) unless specified otherwise.

General

11-001 Any human caused disturbances or modifications that may concentrate runoff, erode the soil, or transport sediment to the channel or water body are

rehabilitated or mitigated to reduce or eliminate impacts. Channel stability of streams is protected during management activities.

11-002 Motorized vehicles are restricted to designated crossings. Motorized vehicles may be allowed on a case-by-case basis, after site-specific analysis, outside of designated crossings where it can be shown to benefit riparian resources.

11-003 Management activities expose no more than 10 percent mineral soil within the project area riparian corridor.

Aquatic Habitats within Streams and Rivers

11-004 The removal of large woody debris (pieces greater than 4 feet long and 4 inches in diameter on the small end) is allowed if it poses a risk to water quality, degrades habitat for aquatic or riparian wildlife species, impedes water recreation (e.g. rafting) or when it poses a threat to private property or Forest Service infrastructure (e.g. bridges). The need for removal must be determined on a case-by-case basis.

11-005 The addition of large woody debris for stream habitat diversity will generally favor stream reaches with an average bank full width of less than 30 feet in Rosgen B channel types. Log length will generally be 50% greater than bank full width. In stream reaches where there may be potential debris impacts to downstream private or public infrastructure (e.g., bridges) or to water-based recreation (e.g. rafting), the active recruitment (placement) of large woody debris will be limited in quantity and scope.

11-006 Stocking of new nonnative species and stocking of previously unstocked areas is not allowed where it will negatively impact native aquatic species or communities. Prior to any stocking, national forests coordinate with the appropriate State and Federal agencies to ensure that populations and habitats of native species are maintained.

11-007 Restoration of chemical integrity of aquatic ecosystems (from impacts such as acid deposition and acid mine drainage) is allowed on a site-specific basis for protection or for restoration of aquatic species.

11-008 Instances where the flow regime is modified for other purposes (such as reservoir releases for recreational sports or hydroelectric demand), evaluate instream flow needs in accordance with the national strategy for water rights and instream flows.

11-009 In-stream habitat improvements, and stream-connected disturbance will be designed and implemented after consideration of the life-cycle requirements of federally listed aquatic species.

Terrestrial Species

11-010 Existing permanent wildlife openings may be maintained within the riparian corridor. However, permanent wildlife openings identified as causing environmental degradation through concentrated runoff, soil erosion, sediment transport to the channel or water body are mitigated or closed and restored. New permanent wildlife openings within the riparian corridor are permitted where needed to provide habitat for riparian species, or threatened, endangered, sensitive, and locally rare species.

11-011 Use no-till mechanical cultivation methods for maintenance of wildlife openings.

11-012 Up to 2 percent early successional forest habitat may be created when the riparian corridor falls within the Ruffed Grouse/Woodcock Habitat Management Prescription 8E1 (measured within riparian corridor across geographically contiguous prescription block).

Rare Communities and Old Growth

11-013 Management actions that may negatively alter the hydrologic conditions of wetland rare communities are prohibited. Such actions may include livestock grazing and construction of roads, plowed or bladed firelines, and impoundments in or near these communities. Exceptions may be made for actions designed to control undesirable impacts caused by beavers, or where needed to control fires to provide for public and employee safety and to protect adjacent private land resources. Beaver impoundments may be removed if they are negatively affecting federally listed species.

11-014 Introducing fish into wetland rare communities is prohibited.

11-015 Canebrake restoration efforts may occur on sites currently supporting cane (*Arundinaria gigantea* or *A. tecta*) and may occur on sites known to historically support cane. Management actions will be designed to increase the vigor, density, and area of existing patches of cane. Actions used to restore canebrakes will include prescribed burning on a 7 to 10 year return cycle, control of competing vegetation, and overstory reduction or removal.

Vegetation and Forest Health

11-016 Insect and disease control measures will be determined on the basis of risk to adjacent resources, long-term sustainability, and appropriate needs for the function and condition of the riparian area. When cutting is an appropriate control tactic, cut and leave is the preferred method for control and suppression of insects and disease in the core of the riparian corridor. Cut and remove is permitted in the extended area beyond the core. Other control measures may be used when a condition poses a risk to stream stability, degrades water quality, adversely affects habitat for aquatic or riparian species, poses a threat to public safety or facilities, or when "cut and leave" is not effective.

11-017 Tree removals from the core of the riparian corridor may only take place if needed to:

- Enhance the recovery of the diversity and complexity of vegetation native to the site;
- Rehabilitate both natural and human-caused disturbances;
- Provide habitat improvements for aquatic or riparian species, or threatened, endangered, sensitive, and locally rare species;
- Reduce fuel buildup;
- Provide for public safety;
- For approved facility construction/renovation; or
- As allowed in standards 11-012 and 11-022.

11-018 Tree removals from the extended area beyond the core of the riparian corridor may take place to meet the objectives of the adjacent management prescription.

Timber Management

11-019 Lands in the core of the riparian corridor are classified as not suitable for timber production. Vegetation management may be accomplished with commercial timber sales when that is the most practical or economically efficient method.

11-020 Lands in the extended area beyond the core of the riparian corridor are

suitable for timber harvest when the adjacent management prescription is also suitable.

11-021 When timber harvest occurs in the extended area beyond the core of the riparian corridor for purposes of meeting the objectives of the adjacent management prescription, then vehicles will be excluded from the extended area.

11-022 Corridors for cable logging in areas adjacent to the riparian corridor may cross the riparian corridor. Crossing will be at as near a right angle as possible, with full suspension preferred.

11-023 In cable logging, when full suspension is not possible, partial suspension is allowed with armoring when yarding logs across perennial and intermittent streams.

Non-timber Forest Products

11-024 Do not permit commercial collection of botanical products in the riparian corridor if it would adversely affect the functions and values of the riparian area.

11-025 Permitted firewood cutting within the riparian corridor must take into consideration large woody debris needs. Ranger Districts will identify areas where firewood cutting is not permitted due to large woody debris concerns.

Wildland Fire Management

11-026 Fire retardants should not be applied directly over open water.

11-027 Use existing fire barriers; such as streams, roads, trails, etc. for control lines where possible.

11-028 When necessary to construct fire lines with heavy equipment (e.g., bulldozers) that cross riparian areas and streams, construct turnouts that will allow runoff to be dispersed and infiltrated into the soil before reaching the stream, and then cross stream at right angle. These fire lines should be stabilized and/or revegetated as soon as possible after the fire is controlled.

Prescribed Fire and Wildland Fire Use

11-029 Plan prescribed fires to use existing barriers, e.g., streams, lakes, wetlands, roads, and trails, to reduce the need for fire line construction.

11-030 Construction of firelines with heavy mechanized equipment (e.g. bulldozers) in riparian corridors is prohibited. Hand lines, wet lines, or black lines are used to create firelines within the riparian corridor to minimize soil disturbance. Water diversions are used to keep sediment out of streams. Firelines are not constructed in stream channels, but streams may be used as firelines.

Recreation

11-031 New trails will normally be located outside of the riparian corridor except at designated crossings or where the trail location requires some encroachment (e.g. to accommodate stream crossings in steep terrain, etc.), or to manage access to water bodies.

11-032 New motorized trails are prohibited within the riparian corridor except at designated crossings or where the trail location requires some encroachment; for example, to accommodate steep terrain. When existing OHV trails within riparian corridor are causing unacceptable resource damage, appropriate mitigation measures (which may include OHV trail

closure) will be implemented.

11-033 Motorized and non-motorized trail reconstruction and relocation within the riparian corridor are allowed to reduce impacts to riparian and aquatic resources.

11-034 Proposed recreation facilities will be located outside of the riparian corridor or 100-year floodplain (Executive Order 11988) and wetlands (Executive Order 11990) unless no practicable alternative location exists. Where future facilities cannot be located out of the 100-year floodplain, structural mitigation and best management practices will be used. Trails, campsites, and other recreational developments are located, constructed, and maintained to minimize impacts to channel banks and to prevent other resource damage. When existing facilities are causing unacceptable resource damage, appropriate mitigation measures will be implemented. Soils are stabilized on eroding trails and recreational sites.

11-035 Where a riparian area is identified as vulnerable to environmental impacts, camping trailers and vehicles should not be allowed within 50 feet of perennial streams or lakes, except at designated areas.

11-036 Overnight tethering or corralling of horses or other livestock is not allowed within 50 feet of stream courses or lakes. Existing corral sites are maintained to limit impacts to water quality and riparian corridors until alternative sites are developed.

Scenery

11-037 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	M	M	M	M	M

Range

11-038 Where grazing is currently allowed and under a permit, grazing is controlled and mitigated to restore, maintain or enhance the integrity of stream channels and banks and prevent unacceptable resource damage. Reauthorizing grazing in riparian corridors within these existing allotments may occur if continued grazing would have no unacceptable resource damage on riparian resources. New grazing allotments or new permits for inactive allotments will exclude the riparian corridor.

11-039 Where authorized by permit, livestock watering areas, stream crossings, and stream banks are managed to maintain bank stability. Designated entry points, crossings, and watering points are located, sized, and maintained to minimize the impact to riparian vegetation and function.

11-040 Feeding troughs and salt and mineral blocks are not allowed inside the riparian corridor unless the entire pasture is within the riparian corridor, in which case they are located as far away from streams as possible. Watering troughs are appropriately located to protect the streams.

Minerals

11-041 The riparian corridors are available for federal oil and gas leasing with a controlled surface use stipulation to protect riparian resources and values. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on the riparian corridor.

11-042 Federal oil and gas leases exist within these corridors on the Clinch Ranger District. Roads, wells, and other necessary infrastructure associated with these leases are allowed. Existing lease stipulations are used to protect the riparian corridor.

11-043 These corridors are not available for commercial or personal mineral materials. Administrative and free use of mineral materials is allowed only to restore riparian areas and aquatic habitat, control erosion and sedimentation, and repair flood damage.

11-044 Private mineral rights exist in some riparian corridors across the Jefferson National Forest. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted. Encourage such interests to minimize disturbance of riparian resources and values.

Roads

11-045 New roads are located outside the riparian corridor except at designated crossings or where the road location requires some encroachment; for example to accommodate steep terrain, or are allowed within the corridor if the road will cause more resource damage if it were located outside the corridor. When existing roads within riparian corridor are causing unacceptable resource damage, appropriate mitigation measures will be implemented.

11-046 In-stream use of heavy equipment or other in-stream disturbance activities is limited to the amount of time necessary for completion of the project. Construction of crossings is completed on all streams as soon as possible after work has started on the crossing. Permanent and temporary roads on either side of stream crossings within the riparian corridor are graveled.

11-047 When constructing roads, each road segment will be stabilized prior to starting another segment. Stream crossings will be stabilized before road construction proceeds beyond the crossing.

11-048 To minimize the length of streamside disturbance, ensure that approach sections are aligned with the stream channel at as near a right angle as possible. Locate riparian corridor crossings to minimize the amount of fill material needed and minimize channel impacts. Generally, permanent structures or temporary bridges on permanent abutments are provided when developing new crossings on perennial streams. Permanent structures, temporary bridges or hardened fords are used when crossing intermittent streams.

11-049 Design structures (culverts, bridges, etc.) to accommodate storm flows expected to occur while the structures will be in place. Use scientifically accepted methods for calculating expected storm flows.

11-050 Design crossings so stream flow does not pond above the structure during normal flows in order to reduce sediment deposition immediately above the crossing and maintain the channel's ability to safely pass high flows.

11-051 Design the crossing so that stream flow will not be diverted along the road if the structure fails, plugs with debris, or is over-topped.

11-052 If culverts are removed, stream banks and channels must be restored to a natural size and shape. All disturbed soil must be stabilized.

11-053 Fords associated with new road construction are not used in perennial streams without site-specific environmental analysis. Establish fords only

under conditions that will not cause significant streambank erosion. Erosion stone or larger rock is used to increase load bearing strength at the water/land interface.

11-054 All new stream crossings will be constructed to allow the passage of aquatic organisms, and maintain natural flow regime. Exceptions may be allowed in order to prevent the upstream migration of undesired species.

Lands and Special Uses

11-055 Riparian corridors are generally unsuitable for new human created stream channel impoundments, but may be considered on a project specific basis, consistent with appropriate Federal and state regulations. Impoundments will generally be designed to allow complete draining, with minimum flows, cold-water releases, and re-aeration in trout waters and other specific waters when needed. Downstream catch basins and fish ladders are constructed for fish salvage/passage, if necessary. New human-constructed impoundments are unsuitable on streams where federally listed species will be negatively affected.

Other Ground Disturbing Activities

11-056 For activities not already covered in the above standards, ground disturbing activities are allowed within the corridor if the activity will cause more resource damage if it were located outside the corridor, on a case-by-case basis following site-specific analysis. Any activity allowed under these conditions is minimized and effective sediment trapping structures such as silt fences, brush barriers, hay bale barriers, gravelling, etc., are required. Sediment control, prior to, or simultaneous with, the ground disturbing activities, is provided.

12A REMOTE BACKCOUNTRY RECREATION--FEW OPEN ROADS

This management prescription is allocated to approximately 9,700 acres (1%) across the Jefferson National Forest.

EMPHASIS:

These lands are managed to provide users with a degree of solitude and a semi-primitive recreation experience in large remote areas that still allow the use of limited public motorized access[8] on existing open roads and/or motorized trails. Areas are 2,500 acres or greater in size, unless the area is adjacent to a wilderness or other backcountry recreation area.

[8] Limited public motorized use is defined as maintaining less than ½ mile of existing open roads or existing motorized trails, per 1,000 acres within this prescription area. No new public motorized uses are allowed.

DESIRED CONDITION:

These areas provide large tracts of backcountry recreation opportunities with a semi-primitive emphasis that allow limited motorized access. Visitors will be able to choose from a variety of predominately non-motorized recreation opportunities such as hiking, backpacking, mountain bike riding, horseback riding, rock climbing, nature study, hunting, and fishing. Limited motorized activities are also available including dispersed camping, pleasure driving, and in some areas all-terrain vehicle or motorcycle trails if this use existed prior to this Forest Plan Record of Decision. New motorized uses are not provided. Closed roads are available for both non-motorized uses as well as administrative access.

These areas are managed and monitored to absorb low to moderate levels of recreation use while protecting air, soil, vegetation, and water resource conditions. Limitations of use

12A REMOTE BACKCOUNTRY RECREATION-FEW OPEN ROADS

will occur if the dispersed activity results in, or is expected to result in, negative affects to the local ecosystem. Human activities may be evident in some places. Visitors will occasionally see other people, especially near the few open roads in these areas. Outdoor skills will be important for visitors in the more remote portions of these areas.

The landscapes of these areas are primarily shaped by natural processes (floods, storms, insects, diseases, and fires). Landscapes feature a structurally diverse mid- to late-successional forest community with a continuous forested canopy, with occasional pastoral and historic/cultural enclaves. The valued character of the natural appearing and cultural landscapes either appears intact or is actually intact. There are no noticeable deviations.

Prescribed fire plays an important role in the maintenance of forested communities found throughout this management prescription. Prescribed fire is used to restore and maintain threatened and endangered species habitats, to ensure the continued presence of fire-dependent southern yellow pine ecosystems, to maintain fire-associated forested communities, and to reduce fuel buildups. Naturally ignited wildland fires are used when possible.

These lands are classified as unsuitable for timber production and timber harvesting rarely occurs unless necessary to contain an insect or disease outbreak or slow the spread of an non-native invasive pest. Salvage of dead and damaged trees may occasionally occur to reduce fuel buildups or to manage outbreaks of insect and diseases; however, it is limited to areas with existing road access since permanent road construction is prohibited. A combination of prescribed fire and wildlife habitat improvements maintain some early successional shade intolerant forest communities, however uneven-aged forest communities with intermediate to high shade tolerance dominate the area. Aside from these occasional management activities, natural processes will eventually result in a large patch old growth forest matrix throughout most of this area interspersed with naturally occurring brushy and herbaceous openings. Cavity trees, cull trees, standing dead trees, and down logs will be common throughout the area as a result of natural mortality. Occasional large openings of early successional habitat may be created through natural disturbance.

Wildlife openings, linear strips, and old field habitats are maintained in a grass/forb or shrub/scrub condition. Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides optimal to suitable habitat for other mid- to late-successional species including hooded warbler, southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk. In addition, the distribution of these areas will provide denning sites and remote habitat conditions for black bear within its range. The protection of rare communities and species associates will be provided, along with protection measures for population occurrences for threatened, endangered, sensitive, and locally rare species.

Road density is less than ½ mile per 1,000 acres, with closed roads serving as fire breaks, wildlife linear strips, hiking trails, and administrative access. New permanent roads are not constructed, although temporary roads and road reconstruction may be necessary to accomplish stewardship objectives.

STANDARDS

Terrestrial and Aquatic Species

12A-001 Existing old fields, pastoral areas, wildlife openings, and other wildlife habitat improvements may be present and maintained. Expansion of existing

openings and/or creation of new openings may occur. Non-invasive non-natives are sometimes used when establishing food plants for wildlife, but native species are preferred. Some openings provide permanent shrub/sapling habitats as a result of longer maintenance cycles.

Threatened, Endangered, And Sensitive Species

12A-002 Within the Peaks of Otter salamander habitat conservation area, activities in this corridor must comply with the Habitat Conservation Agreement. See Management Prescription 8E2 for Peaks of Otter salamander habitat conservation area management direction.

Rare Communities and Old Growth

12A-003 Rare communities requiring disturbance are maintained through wildland fire use, prescribed fire, timber harvest, or felling and leaving of trees.

12A-004 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

12A-005 Allow control of insect and disease outbreaks when necessary to protect the scenic and recreational values, to reduce hazards to visitors, or for safety and legal reasons. When actions are needed, first consider biological controls, secondly hand-control methods, and finally pesticides. Utilize the least ecologically disruptive technique that will accomplish control of the pest.

12A-006 Slow-the-Spread, suppression, and eradication of non-native pests is allowed.

12A-007 Tree cutting may occur incidental to other management activities such as trail construction, maintenance, removal of hazard trees, fireline construction, etc. Mechanical equipment such as chainsaws is permitted.

12A-008 Mechanical fuel treatments such as piling or limbing are permitted.

12A-009 Salvage harvesting operations are allowed to reduce fuels and the risks and hazards of damage from insects and diseases, using existing and temporary roads.

Timber Management

12A-010 These lands are unsuitable for timber production. Except associated with insect/disease outbreaks, hazardous fuels reduction, salvage or valid existing rights and leases, timber harvest is not allowed.

Non-timber Forest Products

12A-011 Personal use firewood cutting is permitted within 100 feet of roads.

Prescribed Fire and Wildland Fire Use

12A-012 Prescribed fire, wildland fire use, mechanical fuels treatments, and associated hand tool or mechanized fire line construction are allowed to reduce wildland fire potential due to high fuel loadings, improve and maintain wildlife habitat, or to benefit fire-dependent and associated species such as table mountain pine and oak forests.

Recreation

12A-013 These backcountry recreation areas are managed for the Semi-Primitive Non-Motorized (SPNM) or Semi-Primitive Motorized (SPM) Recreation Opportunities although actual ROS classes range from Semi-Primitive Non-Motorized (SPNM), to Semi-Primitive 2 (SP2). See ROS Map.

12A REMOTE BACKCOUNTRY RECREATION-FEW OPEN ROADS

12A-014 New non-motorized trails are allowed.

12A-015 Existing motorized roads and trails are monitored for impacts to soil and water quality and problems mitigated. Roads and motorized trails identified as problems are reconstructed, relocated, or decommissioned.

12A-016 Maintain existing licensed motorcycle routes. Allow reconstruction and relocation of existing routes. Building a new trail on the ridge or side slope and closing a trail in the riparian area qualifies as relocation for the purposes of this standard.

12A-017 New routes will not be designated.

12A-018 Seasonal closures are used to protect soil, water, and wildlife habitat security. (See Management Prescription 7C)

Scenery

12A-019 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Range

12A-020 Existing grazing allotments are allowed to continue. New allotments are not permitted.

Minerals

12A-021 These areas are available for federal oil and gas leasing with a no surface occupancy stipulation. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on semi-primitive recreation opportunities and values.

12A-022 These areas are not available for mineral materials for commercial or personal purposes. Administrative or free use of mineral materials is allowed when: a) the materials are used within the backcountry area itself; and b) use is necessary to protect the resources and values of the area.

12A-023 Private mineral rights exist in some areas across the Jefferson National Forest. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted.

Roads

12A-024 Do not construct new permanent roads, subject to valid existing rights or leases. Temporary road construction to facilitate insect/disease treatments, hazardous fuels reduction, or salvage is allowed.

12A-025 Road reconstruction and minor relocation are permitted after full consideration of effects on backcountry resources and values.

12A-026 Decommission any roads not needed for recreational or administrative access.

12A-027 Maintain an open road density at or below ½ mile per square mile (applies to National Forest System roads only).

Lands and Special Uses

12A-028 These areas are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites. Continue existing uses. Require a landscape management plan with screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of upgraded, or reauthorized utility corridors or communication sites.

12B REMOTE BACKCOUNTRY RECREATION - NON-MOTORIZED

This management prescription is allocated to approximately 91,300 acres (13%) across the Jefferson National Forest.

EMPHASIS:

Recreation opportunities are provided in large remote areas where users can obtain a degree of solitude and the environment can be maintained in a near-natural state. There is little evidence of humans or human activities other than recreation use and non-motorized trails. These areas are generally 2500 acres or greater in size, unless the area is adjacent to a wilderness or other backcountry recreation area. Existing roads are closed to all but occasional administrative use.

DESIRED CONDITION:

These areas provide large tracts of backcountry recreation opportunities with a semi-primitive emphasis. Closed roads are available for both non-motorized uses as well as administrative access. Hiking, backpacking, mountain bike riding, horseback riding, rock climbing, nature study, hunting, and fishing are typical activities available in a setting where freedom from the sights and sounds of modern civilization is important. Visitors see little evidence of humans or human activities other than backcountry recreation use, maintenance of wildlife openings, and occasional prescribed burning. Outdoor skills and self-reliance are important for visitors because of the remoteness of these areas.

The foreground the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

The landscapes of these areas are primarily shaped by natural processes (floods, storms, insects, diseases, and fires). Landscapes feature a structurally diverse mid- to late-successional forest community with a continuous forested canopy, with the exception of occasional pastoral and historic/cultural enclaves. The valued character of the natural appearing and cultural landscapes either appears intact or is actually intact. There are no noticeable deviations.

Prescribed fire plays an important role in the maintenance of forested communities found throughout this management prescription. Prescribed fire is used to restore and maintain threatened and endangered species habitats, to ensure the continued presence of fire-dependent southern yellow pine ecosystems, to maintain fire-associated forested communities, and to reduce fuel buildups. Lightning caused wildland fires are used when possible.

12B REMOTE BACKCOUNTRY RECREATION NON-MOTORIZED

These lands are classified as unsuitable for timber production and timber harvesting rarely occurs unless necessary to contain an insect or disease outbreak or slow the spread of an non-native invasive pest. Salvage of dead and damaged trees may occasionally occur to reduce fuel buildups or to manage outbreaks of insect and diseases; however, it is limited to areas with existing road access since permanent and temporary road construction is prohibited. A combination of prescribed fire and wildlife habitat improvements maintain some early successional shade intolerant forest communities, however uneven-aged forest communities with intermediate to high shade tolerance dominate the area. Aside from these occasional management activities, natural processes will eventually result in a large patch old growth forest matrix throughout most of this area interspersed with naturally occurring brushy and herbaceous openings. Cavity trees, cull trees, standing dead trees, and down logs will be common throughout the area as a result of natural mortality. Occasional large openings of early successional habitat may be created through natural disturbance.

Wildlife openings, linear strips, and old field habitats are maintained in a grass/forb or shrub/scrub condition. Wildlife species associated with area-sensitive mid- to late-successional deciduous forest habitats expected to inhabit this area include ovenbird, cerulean warbler, black-billed cuckoo, and Swainson's warbler. This management prescription also provides suitable habitat for other mid- to late-successional species including hooded warbler, southern pigmy shrew, downy woodpecker, eastern gray squirrel, eastern fox squirrel, and sharp-shinned hawk. In addition, the distribution of these areas will provide denning sites and remote habitat conditions for black bear within its range. The protection of rare communities and species associates will be provided, along with protection measures for population occurrences for threatened, endangered, sensitive, and locally rare species.

Road density is less than ½ mile per 1,000 acres, with closed roads serving as fire breaks, wildlife linear strips, hiking trails, and administrative access.

STANDARDS

Terrestrial and Aquatic Species

12B-001 Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife may be present and maintained, but no expansion of openings or creation of new permanent openings of this type occurs. Native species are emphasized when establishing food plants for wildlife. Some openings provide permanent shrub/sapling habitat as a result of longer maintenance cycles.

Rare Communities and Old Growth

12B-002 Rare communities requiring disturbance are maintained through wildland fire use, prescribed fire, timber harvest, or felling and leaving of trees.

12B-003 Old growth patches of all sizes and community types are maintained and restored.

Vegetation and Forest Health

12B-004 Allow control of insect and disease outbreaks when necessary to protect the values for which the area was established, to reduce hazards to visitors, or for safety and legal reasons. When actions are needed, first consider biological controls, hand-control methods, and pesticides.

12B-005 Slow-the-Spread, suppression, and eradication of non-native pests is allowed.

12B-006 Salvage harvesting operations are allowed to reduce fuels and the risks and hazards of damage from insects and diseases, using existing roads only.

Timber Management

12B-007 These lands are unsuitable for timber production. Except associated with insect/disease outbreaks, hazardous fuels reduction, salvage or valid existing rights and leases, timber harvest is not allowed.

Non-timber Forest Products

12B-008 Personal use firewood cutting is prohibited unless it is associated with allowable salvage operations.

Prescribed Fire and Wildland Fire Use

12B-009 Prescribed fire, wildland fire use, mechanical fuels treatments, and associated hand tool or mechanized fire line construction are allowed to reduce wildland fire potential due to high fuel loadings, improve and maintain wildlife habitat, or to benefit fire-dependent and associated species such as table mountain pine and oak forests. Use natural fuel breaks such as streams, roads, rock slides, etc where possible to minimize fireline construction.

Recreation

12B-010 These backcountry recreation areas are managed for the Semi-Primitive Non-Motorized (SPNM) Recreation Opportunity although actual ROS classes range from Semi-Primitive Non-Motorized (SPNM), to Semi-Primitive 2 (SP2). SPNM settings are maintained or expanded. See ROS Map.

12B-011 New non-motorized trails are allowed.

12B-012 OHV use is prohibited except for administrative use.

Appalachian National Scenic Trail

12B-013 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

12B-014 Management activities are designed to meet or exceed the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	H	H	H	H	H	H	H

Range

12B-015 Livestock grazing is not permitted.

Minerals

12B-016 These areas are available for federal oil and gas leasing with a no surface occupancy stipulation. Other Federal minerals may be available on a case-by-case basis after full consideration of effects on semi-primitive recreation opportunities and values.

12B REMOTE BACKCOUNTRY RECREATION NON-MOTORIZED

12C REMOTE BACKCOUNTRY RECREATION-REMOTE AREAS

12B-017 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the backcountry area itself; and b) use is necessary to protect the resources and values of the area.

12B-018 Private mineral rights exist in some areas across the Jefferson National Forest. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted.

Roads

12B-019 Existing roads are closed to all but occasional administrative use which may include the following: (1) utility maintenance; (2) existing wildlife opening maintenance; (3) access required for implementation of prescribed burning; (4) access required for wildland fire suppression; and (5) maintenance of the Audie Murphy Monument.

12B-020 Decommission any roads not needed for administrative access.

12B-021 Do not permit road construction or reconstruction, subject to valid existing rights and leases.

Lands and Special Uses

12B-022 These areas are unsuitable for new linear rights-of-way and communication sites. Require a landscape management plan with screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of upgraded, or reauthorized utility corridors or communication sites.

12B-023 Existing special use authorizations are allowed to continue. Other new special uses are authorized if consistent and compatible with the desired condition of these areas.

12C NATURAL PROCESSES IN BACKCOUNTRY REMOTE AREAS

This management prescription is allocated to approximately 9,800 acres (1%) across the Jefferson National Forest.

EMPHASIS:

Management of these areas emphasizes a wilderness-like remote recreation experience where mountain bikes are allowed and chainsaws may be used to maintain trails. Areas are 2500 acres or greater in size, unless the area is adjacent to a wilderness or other backcountry recreation area. Existing roads are decommissioned.

DESIRED CONDITION:

These areas retain a natural, forested appearance shaped primarily by natural processes. This natural evolving landscape character features a structurally diverse older aged forest community with a continuous forested canopy, with the exception of occasional gaps created by storms, insects, diseases, or fire. The valued character of these landscapes is intact with no deviations.

Natural processes will eventually result in a large patch of late successional to old growth forest matrix dominated by shade tolerant hardwoods and white pines throughout most of this area. Rare communities and associated species not dependent upon disturbance will

continue to exist. Disturbance dependent communities will decline across this prescription area and be confined to small brushy and herbaceous gaps and occasional large openings from natural disturbance events. Insects and diseases, primarily gypsy moth, hemlock woolly adelgid, oak, decline, and southern pine beetle, play a major role in shaping future species composition and successional stages across these areas. Non-native vegetation occurs only as transients and is not self-perpetuating. Cavity trees, cull trees, standing dead trees, and down logs are common throughout the area as a result of natural mortality.

Wildlife species associated with area-sensitive mid- to late-successional forest habitats that are expected to inhabit this area include: ovenbird; cerulean warbler; wood thrush; pileated woodpecker; hooded warbler; and scarlet tanager. This management prescription also provides suitable habitat for black bear.

Management of the area is focused on protecting and preserving the natural environment from human influences. Timber harvest is not appropriate within this prescription area. Wildland fires may be used to restore and maintain the historic fire regime. Prescribed fire may be used to reduce the risks and consequences of wildland fire escaping from the area. Integrated pest management favoring biological controls may be used to eradicate or suppress non-native invasive pests. Non-commercial felling of trees with chainsaws may be used to construct and maintain trails.

Recreation management is designed to provide solitude and remoteness in the most primitive and natural recreation setting possible. To this end, access to the area is limited. Trailheads at surrounding roads are designed with sensitivity to scale and character to set the tone for experiencing a primitive recreation experience. Once in the area, visitors on foot or horseback must rely, to varying degrees, on their own personal physical abilities and primitive recreation skills. Visitors are isolated from the sights and sounds of others and encounters with other visitors are rare. Travel is strictly non-motorized, although mountain bikes and horse are permitted.

The foreground of the Appalachian National Scenic Trail encompasses a portion of this management prescription. Within the foreground of the Appalachian Trail, management practices are designed to achieve the desired condition of this management prescription as well as protect the Appalachian Trail experience, strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the Appalachian Trail passes.

STANDARDS

Terrestrial and Aquatic Species

12C-001 Existing wildlife openings and old fields are not maintained. Expansion of existing openings and/or creation of new openings is prohibited. Where desired, existing openings may be obliterated through tree planting and eradication of non-native species.

Vegetation and Forest Health

12C-002 Only control insect and disease outbreaks to prevent damage to resources on adjacent land or where needed for safety or legal reasons.

12C-003 Recently established non-native invasive plants may be eradicated.

12C-004 Slow-the-Spread of gypsy moth is allowed.

12C-005 Tree cutting may occur incidental to other management activities such as

trail construction, maintenance, removal of hazardous trees, fireline construction, etc. Mechanical equipment, such as chainsaws, is allowed.

Timber Management

12C-006 These lands are unsuitable for timber production. Timber harvest is not allowed, subject to valid existing rights.

Non-timber Forest Products

12C-007 Personal use firewood cutting is prohibited.

Wildland Fire Suppression

12C-008 Tractor-plow units or bulldozers are allowed only on fires with an imminent threat to life or private property that cannot be controlled by other means. Evidence of such use is obliterated as soon as practicable.

Prescribed Fire and Wildland Fire Use

12C-009 Prescribed fire, wildland fire use, mechanical fuel treatments, and associated hand line construction are allowed to reduce wildland fire potential due to high fuel loadings and to benefit fire dependent communities. Use natural fuel breaks such as streams, roads, rock slides, etc. where possible to minimize fireline construction. Fireline construction with heavy equipment is not allowed.

Recreation

12C-010 These backcountry recreation areas are managed for the Semi-Primitive Non-Motorized (SPNM) Recreation Opportunity though actual ROS classes range from Semi-Primitive Non-Motorized (SPNM), to Semi-Primitive 2 (SP2). SPNM settings are maintained or expanded. See ROS Map.

12C-011 Mountain bike and horse trails may be maintained and created within these areas using mechanical equipment suitable for trail maintenance.

12C-012 These areas are unsuitable for designation of new OHV routes or ATV use areas, except for administrative use.

Appalachian National Scenic Trail

12C-013 Within the foreground of the Appalachian Trail, all activities will be planned and carried out in cooperation with the appropriate Appalachian Trail management partner(s). See Management Prescription 4A for additional management direction applicable to this corridor.

Scenery

12C-014 Management activities are designed to meet the following Scenic Integrity Objectives, which may vary by inventoried Scenic Class:

Inventoried Scenic Class	1	2	3	4	5	6	7
Scenic Integrity Objectives	VH	VH	VH	VH	VH	VH	VH

Range

12C-015 Livestock grazing is not permitted.

Minerals

12C-016 These areas are administratively unavailable for Federal oil and gas or other Federal mineral leases. Allow existing Federal leases to continue until expiration. Do not reauthorize. Allow roads, pipelines, utilities, and other facilities per existing Federal leases.

12C-017 These areas are not available for mineral materials for commercial, personal, or free use purposes. Administrative use of mineral materials is allowed when: a) the materials are used within the backcountry area itself; and b) use is necessary to protect the resources and values of the area.

12C-018 Private mineral rights exist in some areas across the Jefferson National Forest. Roads, wells, and other necessary infrastructure associated with these rights are allowed. Requests for access to a non-Federal interest in lands pursuant to a reserved or outstanding right are recognized, and reasonable access is granted.

Roads

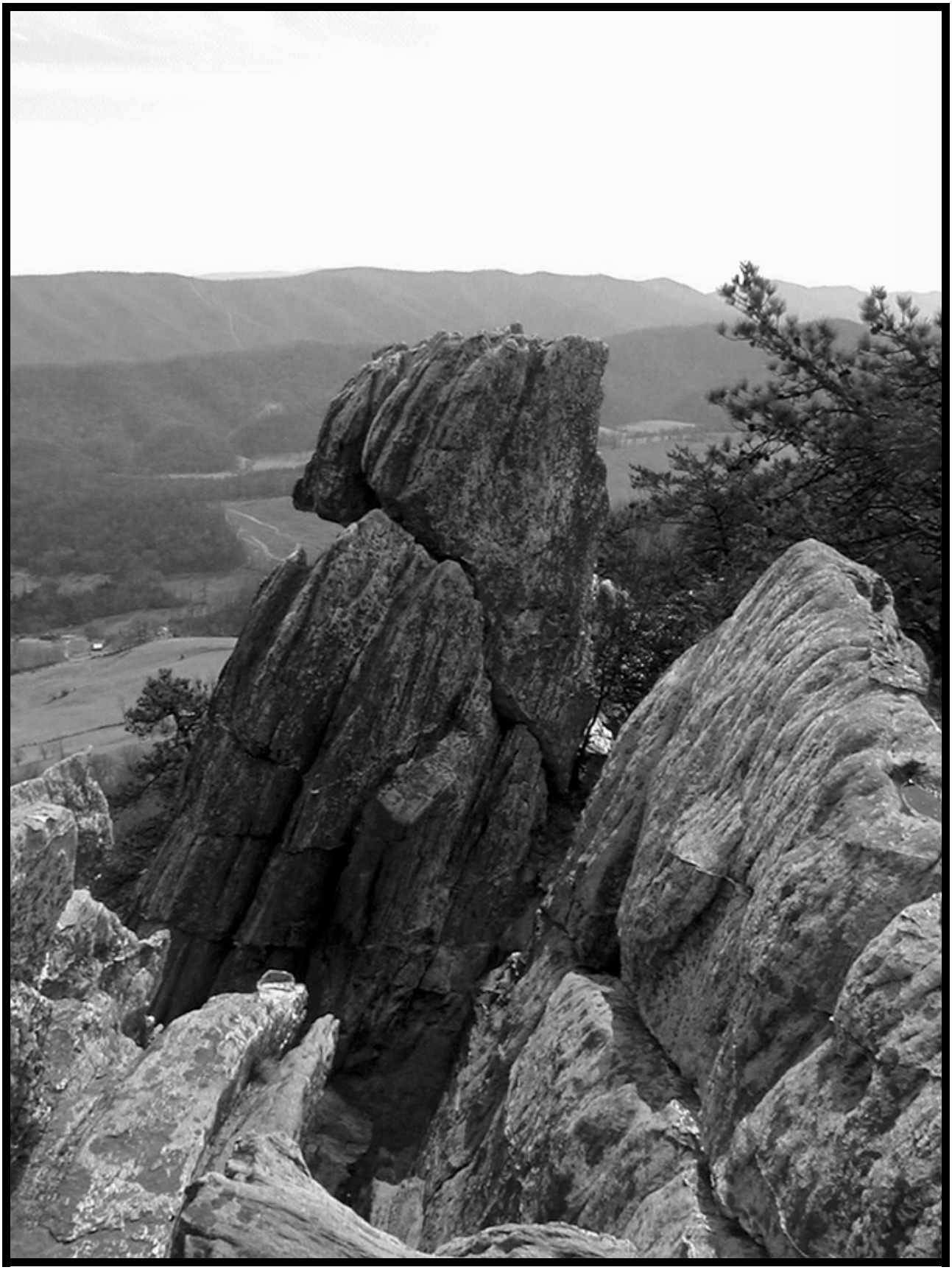
12C-019 Decommission all roads.

12C-020 Do not permit road construction or reconstruction, subject to valid existing rights and leases.

Lands and Special Uses

12C-021 These areas are unsuitable for new linear rights-of-way and communication sites. Require a landscape management plan with screening, feathering, and other vegetation management techniques to mitigate the visual and other impacts of upgraded or reauthorized utility corridors or communication sites.

12C-022 Existing special use authorizations are allowed to continue. Other new special uses are authorized if consistent and compatible with the desired condition of these areas.



The Jefferson National Forest is known for its unique scenic beauty.

MANAGEMENT AREA AND WATERSHED DIRECTION

CHAPTER 4

INTRODUCTION

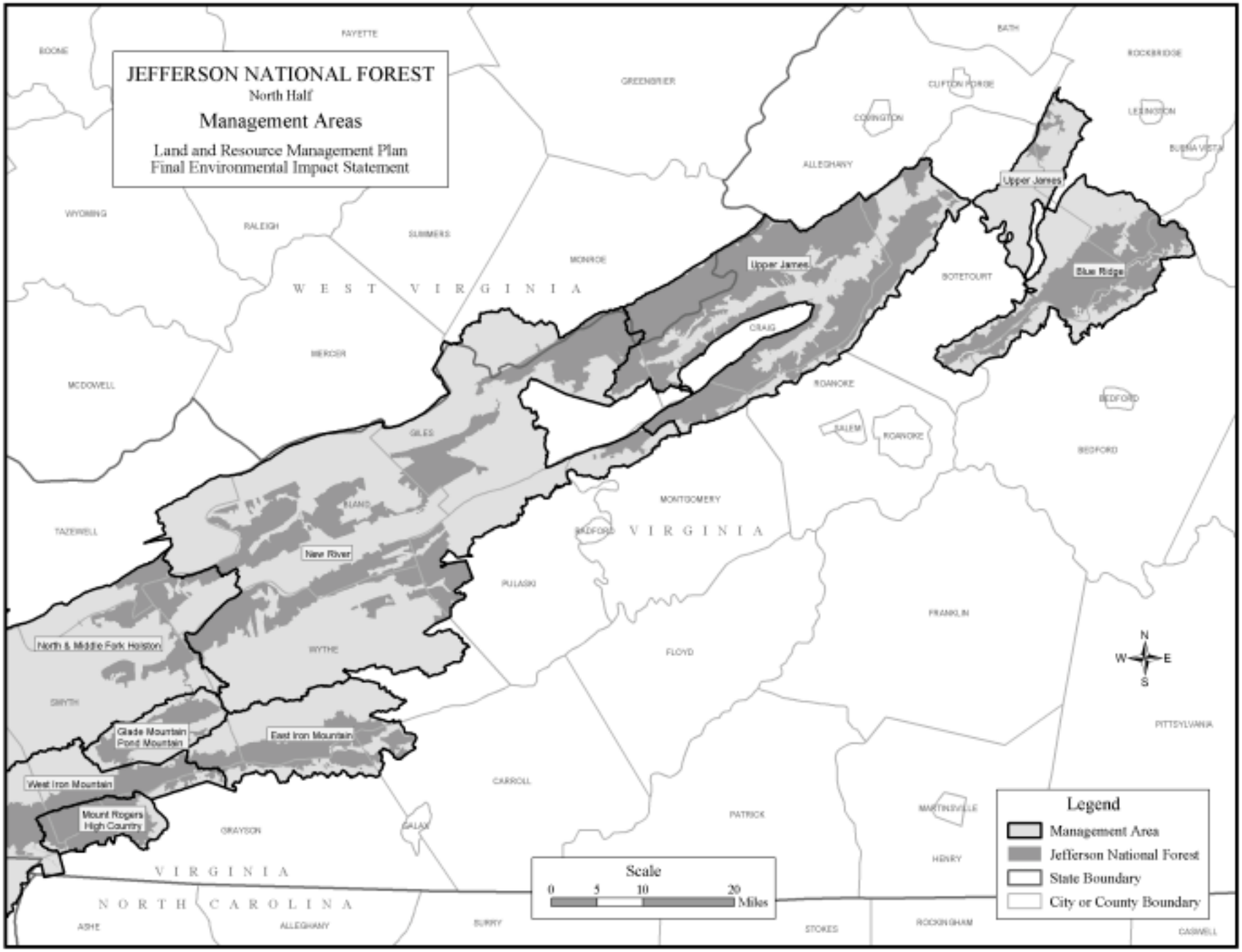
Principles of ecosystem management include consideration of several geographic scales when making management decisions. The Southern Appalachian Assessment considered a scale larger than the Jefferson National Forest. Site-specific project decisions will consider scales much smaller than the entire Forest. Management Areas serve as a bridge between the scale of the entire forest as described in Chapter 2, Forestwide Direction, the scale of individual Management Prescriptions described in Chapter 3, and the site-specific project level analysis that will be done to implement this Forest Plan.

Management Areas were defined based on a holistic approach that considered watershed divides, ecological factors, and social factors. For example, ecologically the Blue Ridge, Ridge and Valley, and Cumberland Mountains Sections distinguish all management areas. Hydrologically, the major river basins of the James, Roanoke, New, Big Sandy, Holston, Cumberland, and Clinch/Powell (Upper Tennessee) delineate many management areas. Lastly, how people relate to and use various areas of the Forest also helped us define some management areas, the High Country of the Mount Rogers for example.

The Jefferson National Forest is separated into eleven distinct management areas (see maps on following pages). Generally running from north to south these management areas are:

1.	Northern Blue Ridge	70,100 acres
2.	Upper James River	196,500 acres
3.	New River	184,600 acres
4.	North & Middle Fork Holston	39,000 acres
5.	Glade Mountain/Pond Mountain	20,600 acres
6.	East Iron Mountain (Mount Rogers NRA)	43,200 acres
7.	High Country (Mount Rogers NRA)	29,000 acres
8.	West Iron Mountain (Mount Rogers NRA)	48,600 acres
9.	Clinch River	54,500 acres
10.	Powell River/Stone Mountain	17,100 acres
11.	Pine Mountain	20,100 acres

The following section describes each of these management areas, the fifth and sixth level watersheds within each management area, the desired future condition, the allocation of management prescriptions, and any direction specific for the management area. Note that Riparian Corridors (11) have not been included in the management prescription tables.


JEFFERSON NATIONAL FOREST
North Half
Management Areas
Land and Resource Management Plan
Final Environmental Impact Statement
Upper James
Upper James
Blue Ridge
New River
North & Middle Fork Holston
Glade Mountain
Pond Mountain
East Iron Mountain
West Iron Mountain
Mount Rogers
High Country
WEST VIRGINIA
VIRGINIA
NORTH CAROLINA
BOONE
FAYETTE
GREENBRIER
BATH
ROCKBRIDGE
CLIFTON FORGE
COVINGTON
LEXINGTON
BUENA VISTA
ALLEGHANY
WYOMING
RALEIGH
SUMMERS
MONROE
BOTETOURT
CRAIG
MERCER
MCDOWELL
ROANOKE
BEDFORD
SALEM
ROANOKE
BEDFORD
GILES
MONTGOMERY
TAZEWELL
BLAND
BEDFORD
PULASKI
FRANKLIN
WYTHE
FLOYD
SMYTH
PITTSYLVANIA
CARROLL
PATRICK
MARTINSVILLE
HENRY
GRAYSON
GALAX
ASHE
ALLEGHANY
SURRY
STOKES
ROCKINGHAM
CASWELL
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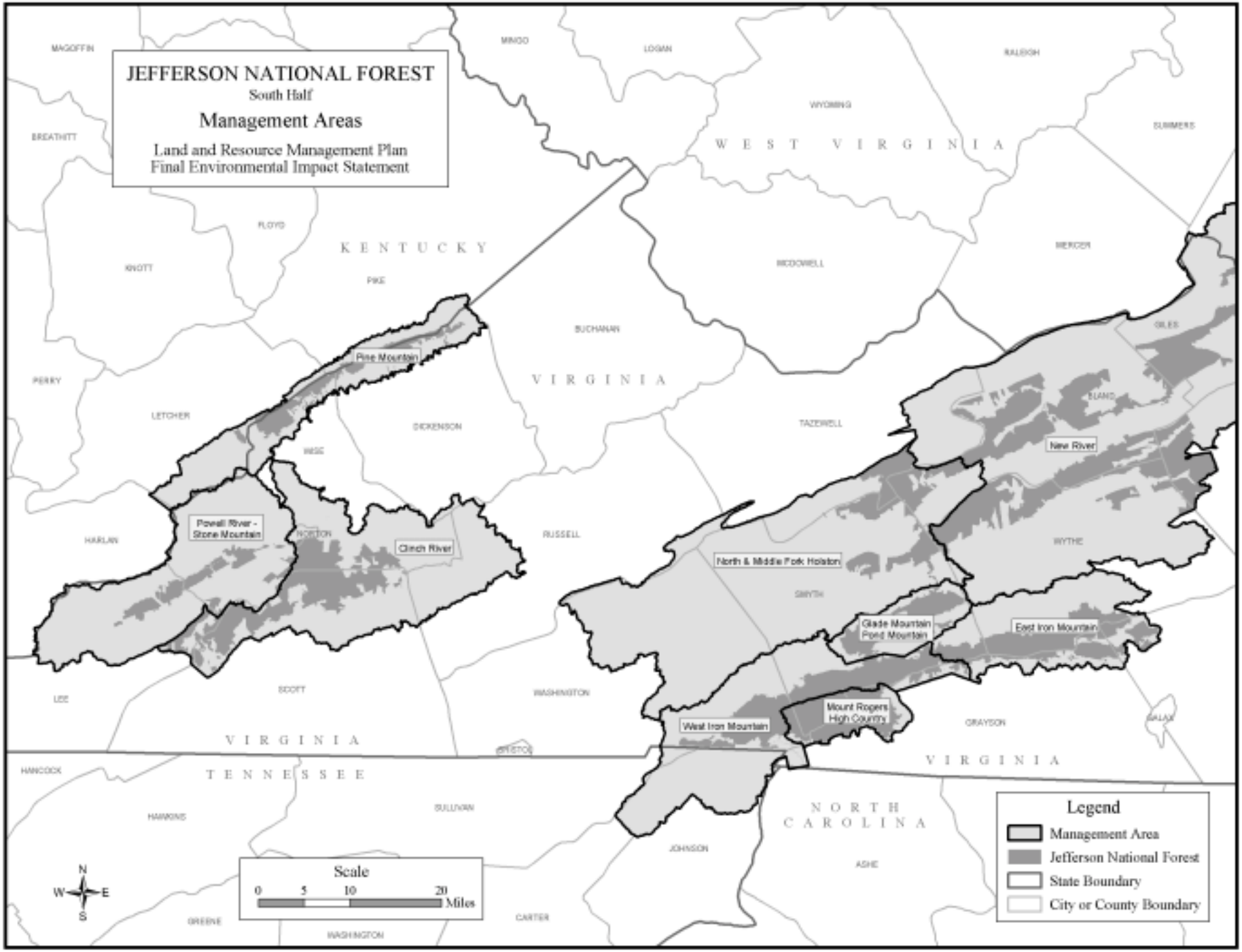
Miles
Legend
Management Area
Jefferson National Forest
State Boundary
City or County Boundary


JEFFERSON NATIONAL FOREST
South Half
Management Areas
Land and Resource Management Plan
Final Environmental Impact Statement
MAGOFFIN
MINGO
LOGAN
RALEIGH
WYOMING
BREATHITT
SUMMERS
W E S T V I R G I N I A
FLOYD
K E N T U C K Y
KNOTT
PIKE
MCDOWELL
MERCER
BUCHANAN
GILES
Pine Mountain
PERRY
V I R G I N I A
BLAND
LETCHER
DICKENSON
TAZEWELL
WISE
New River
Powell River - Stone Mountain
NORTON
Clinch River
RUSSELL
HARLAN
WYTHE
North & Middle Fork Holston
SMYTH
Glade Mountain Pond Mountain
East Iron Mountain
LEE
SCOTT
WASHINGTON
Mount Rogers High Country
West Iron Mountain
GRAYSON
GALAX
V I R G I N I A
BRISTOL
V I R G I N I A
HANCOCK
T E N N E S S E E
HAWKINS
SULLIVAN
N O R T H C A R O L I N A
JOHNSON
ASHE
GREENE
WASHINGTON
CARTER
Scale
0 5 10 20 Miles
N
W
E
S
Legend
Management Area
Jefferson National Forest
State Boundary
City or County Boundary

NORTHERN BLUE RIDGE

MANAGEMENT AREA 1. NORTHERN BLUE RIDGE

This management area contains the Glenwood Ranger District, except for the Smith Flats area. The area lies within the Northern Blue Ridge Ecological Subsection. Congressionally-designated features include the James River Face and Thunder Ridge Wildernesses in its north portion. The James River Face Wilderness provides the Forest's only Class 1 air quality area. The Appalachian National Scenic Trail and Blue Ridge Parkway traverse the area.

Physical and Biological Profile

The Northern Blue Ridge Management Area represents an area of relatively high site productivity dominated by mesic deciduous forests characterized by historically low levels of wildland fire occurrence. The Blue Ridge Mountains Ecological Section contains some of the oldest rocks in Virginia. These igneous and metamorphic rocks, remnants of volcanic explosions and lava flows, form many high gradient, deeply incised streams. North Creek is the only designated Tier III Exceptional Water in Virginia (as of 2003).

Several rare communities can be found within this management area including a high elevation hemlock-yellow birch seepage swamp at Camping Ridge, a montane buttonbrush pond at Day Creek, riverside prairie along the James River, and a representative Carolina hemlock forest, to name a few. Devil's Marbleyard, an eastern acid talus slope within the James River Face Wilderness, is both a rare community and regional attraction.

The Pulaski Tract and Cove Mountain are composed of metasedimentary rocks and soils with sandstone origins and consequently, lower site productivity and more oak and oak-pine forest communities. A few Central Appalachian shale barrens are even sprinkled throughout these areas.

Much of the southern yellow pine was killed by a southern pine beetle outbreak in 1994 and 1995. Other forest health concerns include oak decline and hemlock wooly adelgid infestation, which has already killed many hemlocks in Hunting Creek and has infested many hemlocks elsewhere in the area. Gypsy moth infestations are now occurring in the area.

This management area contains the entire known global range of the Peaks of Otter Salamander, a rare terrestrial salamander. The North Creek area is also home to the cerulean warbler.

Cultural and Economic Profile

This management area has very high value for recreation, wildlife habitat, and timber production. These high resource values have often lead to conflicting demands on resources and management activities in recent years have often been publicly controversial. Timber production is an important part of the economy of the general area and this area is primarily composed of sites capable of producing high quality hardwood sawtimber. The Pulaski Tract and Cove Mountain are popular with local residents for small commercial firewood sales. The area is heavily used for a variety of recreation activities including hunting, fishing, camping, hiking, picnicking, swimming, horseback riding, driving for pleasure, and wildlife viewing.

The Glenwood Horse Trail runs through the entire area with the most popular part of the Horse Trail, a loop starting at the Day Creek trailhead, located at the south end. In addition to the Appalachian National Scenic Trail, are the Apple Orchard Falls and Cornelius Creek National Recreation Trails.

Table 4-1.Northern Blue Ridge Management Area Prescription Allocation

Code	Description	Acres
1A	Designated Wilderness	11,300
1B	Recommended Wilderness Study Areas	1,100
4A	Appalachian Trail Corridor	6,500
4D	Botanical and Zoological Areas	400
4E1a	Cultural and Heritage Areas	<100
4K1	North Creek Special Area	5,200
5A	Administrative Sites	<100
5B	Designated Communication Sites	<100
5C	Designated Utility Corridors	100
6B	Old Growth Forest Communities-Fire Dependant	<100
6C	Old Growth Forest Communities-Disturbance Associated	600
7B	Scenic Corridors and Sensitive Viewsheds	900
7D	Concentrated Recreation Zones	300
7E1	Dispersed Recreation Areas	3,200
7E2	Dispersed Recreation Areas with Vegetation Management	7,000
7F	Blue Ridge Parkway Visual Corridor	3,900
7G	Pastoral Landscapes	200
8A1	Mix of Successional Habitats in Forested Landscapes	900
8B	Early-Successional Habitat Emphasis	2,300
8E1	Ruffed Grouse Habitat Management Area	4,800
8E2a	Peaks of Otter Salamander Primary Habitat Conservation Area	2,400
8E2b	Peaks of Otter Salamander Secondary Conservation Area	5,300
8E5	Watchable Wildlife Emphasis	100
9A2	Reference Watersheds	<100
9F	Rare Communities	400
9G1	Maintenance and Restoration of Bottomland Hardwoods	<100
10B	High Quality Forest Products Emphasis	10,800
12A	Remote Backcountry Recreation -Few Open Roads	2,300

The Blue Ridge Parkway and Forest Service roads provide good public access in most of this area. The Terrapin Mountain and Onion Mountain areas have only a limited amount of road access. Scenic quality is an important feature of this area since much of the area is visible from various viewpoints along the Blue Ridge Parkway and Appalachian Trail.

Population densities are very high with suburbs of Roanoke surrounding the most southern boundary. This population presents substantial demands on the resources of this Management Area. The North Creek drainage is unique on the Glenwood District in that it contains no private in-holdings or residences.

The Apple Orchard Mountain communications site, which includes a large Federal Aviation Administration radar dome, is located in the northeast corner of this area.

Watersheds

There are three 5th level watersheds in the Northern Blue Ridge Management Area: Upper Roanoke, Upper James, and Middle James-Buffalo.

NORTHERN BLUE RIDGE

UPPER ROANOKE

Five 6th level watersheds in the Upper Roanoke basin contain National Forest System lands. One of these, North Fork Roanoke/Bradshaw Creek is in the Upper James River Management Area. Of the remaining four watersheds, North Otter Creek is the only one where National Forest ownership exceeds 10% of the watershed.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
North Otter Creek 03010101080-L24	32,414	11%	Low	Medium

UPPER JAMES

Four 6th level watersheds in the Upper James basin contain National Forest System lands in this Management Area (six others are in the Upper James River Management Area). Three of the four, James River/Jennings Creek, James River/Elk Creek/Cedar Creek, and Looney Creek/Mill Creek have National Forest ownership of more than 10 percent of the watershed. A segment of the James River is eligible as a “recreational river.” Concerns in this watershed include the high recreation pressure that is second only to Mount Rogers High Country at the 5th level watershed.

North Creek, in the Jennings Creek watershed, is the only Tier III Outstanding Natural Resource Water in the state of Virginia. A concern in this watershed is the extent of roads near streams. Every major stream in the southern half of the watershed contains a State or Forest Service Road within its floodplain.

The James River/Elk Creek/Cedar Creek watershed also has a high road density and contains two old quarries (Elk Creek and Hellgate) on the National Forest. Private land influences include a high population density almost completely surrounded by National Forest. This is the only Chemical Condition Class 3 watershed on north end of Forest. This rating reflects chronically low pH in the streams and low acid buffering capacity of the soils. It is also a Physical Condition Class 3 watershed reflecting raw banks, landslides, sediment in stream bottoms, and other indicators of poor stream stability primarily in the bottom lands of Arnold’s Valley itself.

Looney Creek (Segment 147) is impaired due to fecal coliform from agricultural lands.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
James River/Jennings Creek 02080201090-I27	54,517	44%	Low	Low
James River/Elk Creek/ Cedar Creek 02080201090-I28	37,711	42%	Medium	Medium
Looney Creek/Mill Creek 02080201070-I26	39,952	20%	Medium	Low

MIDDLE JAMES - BUFFALO

NORTHERN BLUE RIDGE

One 6th level watershed in the Middle James - Buffalo basin contains National Forest System lands in this Management Area. This is the James River/Reed Creek watershed.

UPPER JAMES RIVER

The Reed Creek watershed has one impaired stream (Reed Creek) due to coliform levels from agriculture. This watershed also has a pulp mill on the James River.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
James River/Reed Creek - 02080203010-H01	62,437	42%	Low	Low

Desired Conditions

The good access and high site productivity in Arnolds Valley and Middle Creek are used to emphasize wildlife habitat management with creation of early successional habitat. The northern end of the Management Area is Wilderness and remote, dispersed recreation opportunities are also highlighted in the eastern end where access is not as well established. The North Creek area's rich diversity of resources is a special management area where water quality, Peaks of Otter salamander, recreation and habitat management are all highlighted. The Habitat Conservation Agreement for the Peaks of Otter Salamander (August 26, 1997) and the standards found in Management Prescription 8E2 are followed to protect this rare species. Visual resources are very important and managed to maintain the spectacular views, especially along the Blue Ridge Parkway, Appalachian Trail, Peaks of Otter and other major roads.

Objectives

MA1-OBJ1 Inventory the Day Creek abandoned mines area during this planning period.

MA1-OBJ2 Maintain North Creek to meet Tier 3 exceptional water standards.

MA1-OBJ3 Meet the conditions of the Peaks of Otter Salamander Conservation Agreement.

MANAGEMENT AREA 2. UPPER JAMES RIVER

The Upper James River Management Area contains the entire New Castle Ranger District, the Smith Flats portion of the Glenwood Ranger District and the portions of the New River Ranger District that flow into Potts Creek and Craig Creek and the North Fork Roanoke River. The area lies within the Ridge and Valley Ecological Subsection. Congressionally-designated features include the Shawvers Run and Barbours Creek Wildernesses and most of the Mountain Lake Wilderness. A segment of the Appalachian National Scenic Trail is located along the southeastern portion of the area.

Physical and Biological Profile

The Upper James River Management Area lies within the Ridge and Valley Ecological Section consisting of closely spaced ridges of sandstone or shale with deep intervening valleys of limestone or shale. The underlying geology of these ridges and valleys has dictated their historic land use as their productivity varies widely.

The natural vegetation of this are was broadly described by Lucy Braun in 1950 as Oak-Chestnut Forest. Although the American Chestnut is no longer a dominant feature of

UPPER JAMES RIVER

these forests, oaks and hickories with small inclusions of rich mixed mesophytic forests in the moist coves still predominate. Historically, before successful fire suppression, many of the oak and oak-pine woodlands found throughout the area were much more open containing a grassy or shrubby understory.

The side slopes that face west in Potts Creek, Johns Creek, and Upper Craig Creek are dominated by Table Mountain pine, a fire dependent species. Site productivity ranges from poor to excellent with most of the area being average. Examples of threatened, endangered, sensitive, or locally rare plant species found in the area include: box huckleberry, pirate bush, sword leaf phlox, small spreading pogonia, Virginia white haired leatherflower and butternut.

The James spinymussel, a federally endangered mussel species, is found in Johns Creek the South Fork of Potts Creek, Catawba Creek and Craig Creek. Big Pond, (less than one

Table 4-2. Upper James River Management Area Prescription Allocation

Code	Description	Acres
0B	Custodial Management-Small Land Areas	500
1A	Designated Wilderness	17,600
1B	Recommended Wilderness Study Areas	4,400
4A	Appalachian Trail Corridor	4,400
4D	Botanical and Zoological Areas	300
4E1a	Cultural and Heritage Areas	100
4E1b	Cultural and Heritage Areas with Vegetation Management	1,500
4J	Urban/Suburban Interface	3,400
4K2	Hoop Hole Special Area	4,400
5A	Administrative Sites	<100
5B	Designated Communication Sites	<100
5C	Designated Utility Corridors	900
6A	Old Growth Forest Communities-Not Disturbance Associated	<100
6B	Old Growth Forest Communities-Fire Dependant	<100
6C	Old Growth Forest Communities-Disturbance Associated	9,200
7B	Scenic Corridors and Sensitive Viewsheds	3,600
7C	OHV Use Areas	1,500
7D	Concentrated Recreation Zones	700
7E1	Dispersed Recreation Areas	7,100
7E2	Dispersed Recreation Areas with Vegetation Management	5,300
8A1	Mix of Successional Habitats in Forested Landscapes	32,400
8B	Early-Successional Habitat Emphasis	13,100
8C	Black Bear Habitat Management Areas	26,800
8E1	Ruffed Grouse Habitat Management Area	2,800
8E4a	Indiana Bat Primary Cave Protection Area	300
8E4b	Indiana Bat Secondary Cave Protection Area	3,900
8E6	Old Field Habitat Emphasis	300
9A1	Source Water Protection Watersheds	700
9A4	Aquatic Habitat Areas	200
9F	Rare Communities	2,800
9G1	Maintenance and Restoration of Bottomland Hardwoods	<100
9H	Management, Maintenance, Restoration of Forest Communities	7,400
12B	Remote Backcountry Recreation-Nonmotorized	40,800

half acre in size) is located on the upper slopes of Johns Creek Mountain and is listed as a unique area by the Virginia Natural Heritage Program. Rare communities in this management area are primarily shale barrens, glades and associated woodlands. Although the area also contains a Southern Appalachian swamp forest-bog complex and montane buttonbrush pond.

Dragons Tooth, a unique geological feature, and Millers Cove are both found in the area. The Cove contains many permanent springs and seeps and a variety of vegetative ecosystems as well as two mapped caves--the Molly Scott Hollow Cave and the Millers Cove Cave. Because of its history and relative isolation, its historic, biological and geological values are unique on the District. Ancient giant landslide features are visible along the southern ridgetop of Sinking Creek Mountain.

Forest health concerns include hemlock wooly adelgid infestations at Roaring Run and in Millers Cove along the Pickles Branch drainage, scarlet oak and black oak decline throughout the area, and southern pine bark beetle infestations in Patterson Creek, Barbours Creek Wilderness, the Fenwick Mines, Lignite, and other scattered areas. Back Valley, Potts Creek, Peters Mountain, and North Mountain have all been treated with pheromone flakes as a pre-suppression or suppression efforts for gypsy moth infestations. Various native defoliating loopers continue to infest the Johns Creek area. Dogwood is scarce due to anthracnose-induced mortality.

Cultural and Economic Profile

Vegetation has historically been managed for both timber and wildlife throughout most of this management area. This is particularly true in Patterson Creek, Catawba, Lower Potts Creek, and the gentle slope areas in Upper Craig. Due to limited access, vegetation management in the upper reaches of Potts Creek has been minimal. The vegetation in the Roaring Run area was impacted by iron ore mining at the turn of the 20th century, resulting in large even-aged stands approximately 85 years old. There are approximately 2,000 acres that are less than 30 years of age in the Lignite area that were purchased in 1997.

Hunting is an important part of the culture here and that is the primary recreation use in this area. A major feature of the area is the Wildlife Road (FSR 224), built in the early 1960s for wildlife research conducted by Virginia Tech and the Virginia Division of Game and Inland Fisheries. It provides many wildlife clearings and water holes and is very popular for hunting, scenic driving, wildlife viewing, and firewood cutting. There are several hiking trails from the road to the North Mountain Trail that are used by both hikers and mountain bikers. There is an area in Tub Run that was developed in cooperation with the Ruffed Grouse Society to emphasize management for ruffed grouse. Craig Creek Recreation Area is also managed for quail habitat in cooperation with the Virginia Department of Game and Inland Fisheries and Quail Unlimited, with plantings of warm season grasses.

The only all-terrain vehicle (ATV) trail area on the Forest is located on Patterson Mountain.

Many dispersed and developed recreation opportunities are centered around historic sites. Millers Cove is a unique, historically-farmed isolated cove, accessible to the public by foot travel only. Two main features are the old historic mining areas of Fenwick and Lignite. While little remains of either original town, Fenwick is now a picnic area with nature walks and a family fishing pond, and the Town of Lignite is being evaluated by archaeologists. The old Catawba Furnace, a relic of the mining history of the District, is located on the National Forest off State Route 600. Roaring Run Furnace has a very popular day use area and several trail opportunities near the historic furnace.

UPPER JAMES RIVER

The crest of Potts Mountain is utilized for communications towers by the Forest Service, the Federal Aviation Administration, local law enforcement, and private industry.

The Catawba and North Fork of Roanoke areas are more urban than Craig County, as they are adjacent to the cities of Blacksburg and Roanoke. These privately-owned lands along the NFS boundary and main road corridors are gradually being converted from large rural parcels to single family small parcels. It can be anticipated that this conversion will accelerate over time. The area typifies the "wildland-urban" interface.

Most of the area has good access. The exceptions are the Lower Craig Creek and upper Potts Creek areas. Most of the valley bottoms are in private ownership so there are a number of tracts of National Forest on the mountain slopes that are difficult to access.

Watersheds

This Management Area has only one 5th level watershed, the Upper James River. One 6th level watershed in the Upper Roanoke basin, North Fork Roanoke/Bradshaw Creek, is also included in this Management Area since it is in the Ridge and Valley and adjoins National Forest System lands within the Upper James River watershed. However, the North Fork watershed has less than 3 percent of its area in National Forest ownership.

UPPER JAMES

Six 6th level watersheds in the Upper James basin contain National Forest System lands in this Management Area. These are Upper Potts Creek, Catawba Creek, Upper Craig Creek, Johns Creek, Lower Craig Creek/Patterson Creek/Lower Barbours Creek, and Upper Barbours Creek. Sensitive aquatic species is a concern throughout this watershed. The James spiny mussel is found in all the 6th level watersheds except Upper Barbours Creek. In addition, the orangefin madtom is present in Upper Craig Creek, Johns Creek and Lower Craig Creek. The Atlantic pigtoe, a state-listed threatened mussel and the roughhead shiner a state species of special concern are also found in the Upper James River watershed.

Wetland resources in the area include a natural pond on Potts Mountain and wetlands along Cove Creek and on Peters Mountain. In the Upper Craig watershed there are a number of fire dependent plant communities on Brush Mountain and concerns with the urban/wildland interface in this same area. The Lower Craig/Patterson Creek watershed

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Upper Potts Creek 02080201030-I10	66,585	59%	Low	High
Catawba Creek 02080201070-I25	73,780	15%	Medium	Medium
Upper Craig Creek 02080201080-I19	62,778	72%	Low	Medium
Johns Creek 02080201080-I21	58,978	61%	Low	High
Lower Craig Creek/Patterson Creek/Lower Barbours Creek 02080201080-I22	79,409	53%	Low	High
Upper Barbours Creek 02080201080-I23	19,973	84%	Low	Low

contains the Forest's all-terrain vehicle trail and is also a popular area for creek-based recreation. Mining was an important aspect of past management with the Fenwick and Lignite mine areas in this watershed. Concerns in the Catawba watershed include urbanization and hazardous waste sites. A section of Catawba Creek is water quality limited.

Desired Conditions

Restoration of the more open oak and oak-pine woodlands on the drier south-facing slopes and ridgetops through reintroduction of wildland and prescribed fire will benefit many of the wildlife species found throughout this management area Both early and late successional forest species can find important elements of their habitat needs in these historically widespread communities. Increased use of fire will also reduce potential wildland-urban interface problems along the Forest boundary where communities are developing.

Clean water and gravels will be provided in streams inhabited by and upstream of the James spinymussel, Atlantic pigtoe and their host fish, as well as the roughhead shiner and orangefin madtom so that populations can be maintained, protected and restored.

The traditional emphasis of this management area on creation of wildlife habitat is continued with a focus on early successional habitat and a mix of habitats especially in the Broad Run, Johns Creek, Fenwick areas and along roads in Patterson Creek. Tub Run will continue to managed for ruffed grouse and Craig Creek for quail. Habitat for more remote wildlife, like bear, continues to be the emphasis in the Potts Creek drainage and the west slope of Upper Craig Creek. The upper end of Potts Creek and Johns Creek also has the Mountain Lake Wilderness. Remote conditions continue in the two Wildernesses and a large block of the North, Caldwell and Price Mountain is devoted to remote backcountry recreation.

Objectives

There are no objectives specific to this area.

MANAGEMENT AREA 3. NEW RIVER

This management area contains the portion of the New River Valley Ranger District that is within the New River watershed. It lies within the Ridge and Valley Ecological Subsection. Congressionally-designated features include Peters Mountain Wilderness, Kimberling Creek Wilderness, and a portion of the Mountain Lake Wilderness. The Appalachian National Scenic Trail runs through most of the northern part of this area.

Physical and Biological Profile

The geology and vegetation of the New River Management Area are very similar to those described for the Upper James River, since they both lie in the Ridge and Valley Ecological Section. The higher elevations of the Mountain Lake Wilderness are different however, containing inclusions of both northern hardwoods and red spruce. There are fewer rare shale barrens, and we begin to pick up some different rare mountain wetland communities, including a montane herbaceous pond, a Central Appalachian calcareous shrub fen/seep, a montane basic seepage swamp, and several Appalachian bogs. The Dismal Creek area contains an excellent example of a northern white-cedar slope forest.

Stony Creek supports some mixed mesophytic forest and contains wetlands, bogs, red-spruce habitat, and cliff lines that provide for the highest capture rates for eastern woodrats in Virginia, and provides remote habitat for an abundance of black bear. Table

NEW RIVER

mountain and pitch pine are found on southwest aspects along the north side of Little Walker Mountain and along the southwestern slopes of Piney Ridge and Tract Mountain. In addition, box huckleberry, a Forest Service sensitive plant species, is found along the north side of Little Walker Mountain. Past disturbance from fires was instrumental in these species occurring in this area today.

Beaver activity has contributed to open wetland areas along the upper portions of North Fork, White Rocks Branch, Stony and Little Stony Creeks, Mud Branch and the upper portions of Nobusiness and Dismal Creeks.

Forest health concerns include gypsy moth. Various strategies to control gypsy moth populations have been employed in the Goldbond area since 1989 to control an isolated low level population outbreak.

Stony Creek, Laurel Creek, and the lower reaches of Dismal Creek contain the candy darter, a Forest Service sensitive fish species. Wolf Creek contains populations of the Tennessee heelsplitter mussel.

Table 4-3. New River Management Area Prescription Allocation

Code	Description	Acres
0B	Custodial Management-Small Land Areas	800
1A	Designated Wilderness	11,400
1B	Recommended Wilderness Study Areas	11,000
2C3	Eligible Recreational River	700
4A	Appalachian Trail Corridor	11,800
4D	Botanical and Zoological Areas	<100
4J	Urban/Suburban Interface	400
5A	Administrative Sites	<100
5B	Designated Communication Sites	100
5C	Designated Utility Corridors	2,300
6A	Old Growth Forest Communities-Not Disturbance Associated	<100
6B	Old Growth Forest Communities-Fire Dependant	500
6C	Old Growth Forest Communities-Disturbance Associated	10,600
7B	Scenic Corridors and Sensitive Viewsheds	3,100
7D	Concentrated Recreation Zones	1,800
7E1	Dispersed Recreation Areas	5,300
7E2	Dispersed Recreation Areas with Vegetation Management	7,100
8A1	Mix of Successional Habitats in Forested Landscapes	40,200
8B	Early-Successional Habitat Emphasis	800
8C	Black Bear Habitat Management Areas	8,900
8E1	Ruffed Grouse Habitat Management Area	2,800
8E4a	Indiana Bat Primary Cave Protection Area	200
8E6	Old Field Habitat Emphasis	900
9A1	Source Water Protection Watersheds	11,900
9A3	Watershed Restoration Areas	1,100
9A4	Aquatic Habitat Areas	1,500
9F	Rare Communities	1,200
9G1	Maintenance and Restoration of Bottomland Hardwoods	<100
9H	Management, Maintenance, Restoration of Forest Communities	11,300
12B	Remote Backcountry Recreation-Nonmotorized	33,600
12C	Remote Backcountry Recreation-Natural Processes	2,900

The Crawfish Valley was once actively farmed. Today it is managed as a complex of open and old field habitats through the use of prescribed fire, mowing and timber harvest. Both the blue-winged and golden-winged warbler, locally rare bird species, inhabit the area. The cerulean warbler, another locally rare species, is found on Round Mountain. The Poverty Creek area is well known for historical occurences of several sensitive butterflies and moths, including the diana fritillary and the Appalachian grizzled skipper.

Cultural and Economic Profile

Use of public lands is greatest during hunting season, primarily by local residents. The area also provides horseback riding, bicycle riding, fishing and picnicing opportunities on National Forest lands in the area. The Appalachian Trail heavily influences this management area. Two major recreation attractions are Pandapas Pond and the Cascades. Both are easily accessible to Blacksburg and have very high use. A network of multiple use trails connect Pandapas Pond to the Poverty Creek drainage. The trails have a very high established use by mountain bike users, horseback riders and hikers. The Cascades includes a picnic area and the Cascades National Recreation Trail.

Interstate 77 cuts through the middle of the Management Area from north to south. The southern perimeter of the area is heavily influenced by industrial and more urban development in the towns of Blacksburg, Pulaski, Dublin, Wytheville, and Radford and along the corridors of Interstates 81 and 77, and U.S. 460. Privately-owned lands along the public roads within this area are gradually being converted from large rural parcels to single family small parcels and more extensive single family housing subdivisions. It is anticipated that this conversion will accelerate over time. The area typifies the "wildland-urban" interface found on the more developed parts of the Forest.

Illegal all-terrain vehicle use continues to be a problem in the area, particularly in the upper Hunting Camp Creek portion. Problems with illegal dumping, litter, and poaching are continual problems on National Forest lands in parts of the area.

Communication sites atop Brush Mountain, Butt Mountain, Flat Top Mountain, and Walker Mountain house communications equipment for the Forest Service and other agencies.

This management area contains the 1,000 foot corridor for the proposed location of the 765 kV Appalachian Electric Power powerline that has been recently approved but not yet constructed, as well as an existing 69 kV line.

State and Forest Service roads provide good access throughout the northern portion of the area. Access in much of the Tract Fork, Stony Fork and Crawfish Valley is limited to the lower slopes with little access to their upper slopes. In the Wolf Creek area there are several parcels of National Forest with no access. Access to National Forest Land on Little Walker Mountain and Big Walker Mountains north of Interstate 77 is very limited with mostly private ownership along the state routes in the valleys.

Watersheds

This Management Area has two 5th level watersheds, the Middle New River and the Upper New River.

MIDDLE NEW RIVER

Eleven 6th level watersheds in the Middle New River basin contain National Forest System lands in this Management Area. Seven of these watersheds have National Forest ownership that comprises 10 percent or more of the watershed, New River/Little Stony Creek, Stony Creek, Kimberling Creek, Little Walker Creek, Upper Wolf Creek, Hunting

NEW RIVER

Camp Creek, and New River/East River.

Little Stony Creek and Big Stony Creek are eligible as a "recreational rivers." It is subject to a high level of recreational use with the Cascades Recreation Area. It has also been subject to repeated recent flooding. Big Stony Creek is also eligible as a "recreational river." The candy darter is found in Big Stony Creek and this watershed contains the Glen Alton Tract, a recent acquisition that has high recreation potential related to its ponds and streams. Dismal Creek, in the Kimberling Creek watershed, supports populations of candy darter and there is much beaver activity in Dismal and Nobusiness Creeks. Upper Wolf Creek supports populations of the Tennessee heelsplitter mussel. This watershed also includes Burkes Garden and a number of agriculture/dairy operations. Hunting Camp Creek has a portion of the stream that is impaired from unknown causes.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
New River/Little Stony Creek 05050002010-N24	29,392	18%	Medium	High
Stony Creek 05050002010-N28	30,973	80%	Low	Medium
Kimberling Creek 05050002020-N26	60,773	53%	Low	Medium
Little Walker Creek 05050002020-N27	38,458	54%	Low	Low
Upper Wolf Creek 05050002030-N30	50.576	21%	Medium	Low
Hunting Camp Creek 05050002030-N31	20,581	77%	Low	Low
New River/East River 05050002040-N29	24,658	18%	Low	Low

UPPER NEW RIVER

Five 6th level watersheds in the Upper New River basin contain National Forest System lands in this Management Area. Three of these watersheds have National Forest ownership that comprises 10 percent or more of the watershed, Upper Reed Creek, Cove Creek and Peak Creek. A small portion of Upper Reed Creek is also located in the Glade Mountain Management Area.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Upper Reed Creek 05050001080-N10	93,506	29%	High	Low
Cove Creek 05050001080-N12	24,512	16%	Medium	Low
Peak Creek 05050001100-N17	59,666	30%	Low	Low

Peak Creek is the municipal water supply for the Town of Pulaski. Downstream of the reservoir, Peak Creek is impaired from urban sources. The stream has a Physical Condition Class of 3.

Desired Conditions

Restoration of the more open oak and oak-pine woodlands on the drier south-facing slopes and ridgetops through reintroduction of wildland and prescribed fire will benefit many of the wildlife species found throughout this management area. Both early and late successional forest species can find important elements of their habitat needs in these historically widespread communities. Increased use of fire will also reduce potential wildland-urban interface problems along the Forest boundary where communities are developing.

Clean water and gravels will be provided in streams inhabited by and upstream of the Tennessee heelsplitter and its host fish in Wolf Creek, as well as the candy darter in Laurel Creek, Stony Creek, and Dismal Creek so that populations can be maintained, protected and restored. The water quality from streams draining into Hunting Camp Creek will be improved through restoration on NFS lands and working cooperatively with local landowners.

Remote characteristics are emphasized north of the New River, with Mountain Lake and Peters Mountain Wildernesses and bear habitat on the more remote ridges. More accessible areas, like Clendenin, are managed for a mix of wildlife habitats. Recreation is a strong emphasis at Cascades and Poverty Creek, while fishing, recreation and protection of aquatic species are the focuses along Stony Creek.

Wilderness and backcountry recreation is the emphasis along the Appalachian Trail from Garden Mountain to Brushy Mountain. Readily accessible areas at Crab Orchard and between Kimberling Creek Wilderness and Brushy Mountain will be used to create a mix of habitats. This is also true for Round Mountain and Dismal Creek. Crawfish Valley is managed to provide old field and early successional habitat while the surrounding slopes are managed for backcountry recreation. Backcountry recreation is also the focus of the Long Spur and Tract Fork areas, while developed and dispersed recreation are featured in Stony Fork and municipal watershed management in Peak Creek.

Objectives

There are no objectives specific to this area.

MANAGEMENT AREA 4. NORTH & MIDDLE FORK HOLSTON

This management area contains the western portion of the New River Ranger District that drains into the Holston River. The area lies within the Ridge and Valley Ecological Subsection. A Congressionally-designated feature is the Beartown Wilderness. A segment of the Appalachian National Scenic Trail runs through the area.

Physical and Biological Profile

The geology and vegetation of the North & Middle Fork Holston Management Area are very similar to those described for the New River, since they both lie in the Ridge and Valley Ecological Section. The higher elevations of the Beartown Wilderness, like Mountain Lake, contain both northern hardwoods and red spruce. The almost 800 acres of red spruce are a rare community. Chestnut Ridge to the immediate south of Beartown Wilderness is a grassy bald rare community.

NORTH & MIDDLE FORK HOLSTON

Table 4-4. North & Middle Fork Holston Management Area Prescription Allocation

Code	Description	Acres
0B	Custodial Management-Small Land Areas	900
1A	Designated Wilderness	5,600
1B	Recommended Wilderness Study Areas	3,300
4A	Appalachian Trail Corridor	1,300
6B	Old Growth Forest Communities-Fire Dependant	<100
6C	Old Growth Forest Communities-Disturbance Associated	2,200
7B	Scenic Corridors and Sensitive Viewsheds	200
8A1	Mix of Successional Habitats in Forested Landscapes	9,500
8C	Black Bear Habitat Management Areas	2,400
9A4	Aquatic Habitat Areas	4,600
12B	Remote Backcountry Recreation-Nonmotorized	2,000
12C	Remote Backcountry Recreation-Natural Processes	6,900

Lick Creek drains into the North Fork of the Holston River and provides habitat for the Tennessee dace, a Forest Service sensitive species. Bear Creek and Hungry Mother Creek drain into the Middle Fork of the Holston River and also contain the Tennessee dace.

Forest health concerns include oak decline, especially on scarlet and black oaks. Gypsy moth infestations are expected during the current planning cycle. Hemlock wooly adelgid infestations are beginning to impact this area as well.

Cultural and Economic Profile

The entire area receives considerable use during hunting season. Illegal 4-wheel use is heavy throughout the area, including within the Beartown Wilderness.

The close proximity of the area to population centers in Wytheville, Rural Retreat and Marion, and the ease of access from Interstate 81 and various federal highways, state secondary roads and Forest Service roads make the area a popular destination for dispersed recreation on the Forest.

While the western portion of the area is less than ten miles from the town of Tazewell, it is considered to be remote due to the lack of paved roads. The western section of the area is bisected by Poor Valley Road. Along this road system there are dozens of hunting cabins and numerous houses. Two of the larger groups of residences are informally known as the communities of Poor Valley and Roaring Fork.

Timber harvest has historically occurred on public and private lands in the area. The overall quality of the timber is considered moderate in the Bear Creek area and low in the Beartown area.

Watersheds

This Management Area is located in two 5th level watersheds, the North Fork Holston River and the South Fork Holston River.

NORTH FORK HOLSTON

Two 6th level watersheds in the North Fork Holston basin contain National Forest System lands in this Management Area. These are Upper North Fork Holston River and North Fork Holston River/Laurel Creek. This watershed supports populations of the Tennessee dace

in Lynn Camp Creek and in the North Fork Holston River.

Segment 229 of the North Fork of the Holston is impaired due to agriculture impacts. This section also supports the longhead darter and the slippershell and slabside pearly mussels. Private inholdlings in the Upper North Fork Holston have about 60 private hunting cabins located adjacent to the National Forest. In the Laurel Creek watershed there is much illegal all-terrain vehicle use that enters the Beartown Wilderness.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Upper North Fork of Holston River (Lick Creek)	72,422	22%	Medium	Medium
North Fork Holston River/ Laurel Creek 06010101010-O10	75,207	15%	High	High

SOUTH FORK HOLSTON

Two 6th level watersheds in the South Fork Holston basin contain National Forest System lands in this Management Area. These are Upper Middle Fork Holston River and Middle Fork Holston River/Hungry Mother Creek. Portions of the Glade Mountain Management Area are also located in both of these watersheds. Portions of the West Iron Mountain Management Area are also located in the Upper Middle Fork Holston watershed.

The Tennessee dace inhabits both watersheds. The Tennessee heelsplitter is found in the Middle Fork Holston. The Upper Middle Fork Holston also contains a developed spring just downstream from the National Forest that supplies the Town of Marion with drinking water. This watershed also contains a large silica/sand mine. Hungry Mother State Park is located in the Middle Fork Holston watershed adjacent to the National Forest. The Middle Fork supports populations of little-wing pearly, tan riffleshell, Tennessee heelsplitter, slabside pearly, and cracking mussels around Marion and Atkins.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Upper Middle Fork Holston River 06010102020-O03	52,121	33%	Low	Low
Middle Fork Holston River/ Hungry Mother Creek 06010102020-O04	50,234	10%	Medium	High

Desired Conditions

Remote backcountry and Wilderness continue from the adjoining New River Management Area along Garden Mountain and Beartown. The more accessible areas are managed to create a mix of wildlife habitats and Bear Creek is a mix of bear management and backcountry recreation.

Clean water and gravels in streams inhabited by and upstream of the Tennessee dace are provided so that populations can be maintained, protected and restored.

GLADE MOUNTAIN/POND MOUNTAIN

Objectives

There are no objectives specific to this area.

MANAGEMENT AREA 5. GLADE MOUNTAIN/POND MOUNTAIN

Glade Mountain/Pond Mountain is a crossroads management area. It is the only management area in the Great Valley Ecological Subsection. It had been part of the Wythe Ranger District, but is now administered by the Mount Rogers National Recreation Area, though it is not within the proclaimed National Recreation Area. The only Congressionally designated feature is the Appalachian Trail that crosses through the center of the area where it leaves the Blue Ridge for the Ridge and Valley.

Interstate 81 is along the northern boundary of the area. The southern boundary is State Routes 614 and 670. Private lands surround this management area on all sides except for the National Forest lands that form a corridor along the Appalachian Trail in the northeast and southwest corner of this management area.

Physical and Biological Profile

Glade Mountain Management Area is uniquely situated in that it is part of a natural constriction that lies south of Interstate 81 and is part of a natural corridor for black bear as they cross the Great Valley from the Southern Blue Ridge Subsection to the Ridge and Valley. Unfortunately many black bear and other species fall victim to interstate traffic in this area.

There are no identified rare communities within this management area. Native brook trout are found in Nicks Creek and Killinger Creek. Both of these streams have been heavily impacted in the past: Nicks primarily from State Route 622 and Killinger from the private mining operations which occurred several years ago. Several rare aquatic species are known to occur within the Middle Fork of Holston River.

Forest health concerns include oak decline, especially on scarlet and black oaks. Gypsy moth infestations are expected during the current planning cycle. Hemlock wooly adelgid infestations are beginning to impact this area as well.

Code	Description	Acres
0B	Custodial Management-Small Land Areas	500
4A	Appalachian Trail Corridor	2,900
4E1a	Cultural and Heritage Areas	<100
5A	Administrative Sites	<100
5B	Designated Communication Sites	<100
5C	Designated Utility Corridors	100
6B	Old Growth Forest Communities-Fire Dependant	100
6C	Old Growth Forest Communities-Disturbance Associated	1,000
7B	Scenic Corridors and Sensitive Viewsheds	200
7G	Pastoral Landscapes	100
8C	Black Bear Habitat Management Areas	15,100
9A3	Watershed Restoration Areas	600

Cultural and Economic Profile

Prominent features include Glade Mountain and Pond Mountain. Use of the area is

primarily by dispersed recreationists such as hunters and hikers.

Timber harvesting and the mining of manganese have been the major historical uses for this area. Mining was completed by the mid 1900's and restoration of these areas was done in the 1960's under Forest Service management. Today the majority of these areas are restored with small portions needing on-going restoration work.

The Appalachian National Scenic Trail is the most prominent recreation resource within this management area. The main developed facility is the Pat Jennings Visitor Center which is located centrally along State Route 16. This route serves as a primary access to the Mount Rogers National Recreation Area.

Illegal all-terrain vehicle use on this area is also a problem that appears to be growing annually. This illegal use is coming onto National Forest from adjoining private lands primarily on the east end of Glade Mountain.

Watersheds

This Management Area is one of two on the Forest that is not defined by watershed divides. This Management Area is located in two 5th level watersheds, the South Fork Holston River and the South Fork Holston River.

SOUTH FORK HOLSTON

This management area is located in three 6th level watersheds within the South Fork Holston basin. These are the Upper Middle Fork Holston River, Middle Fork Holston River/ Hungry Mother Creek and the Upper South Fork Holston River. These watersheds are described in the Holston (MA 4) and West Iron Mountain (MA 9) Management Area descriptions.

The Upper South Fork Holston contains many old manganese and sand strip mines, including Georges Branch, Slabtown and Iron Mountain Mines. This watershed also contains the Buller Fish Cultural Station, which includes the Aquatic Wildlife Conservation Center, used to propagate and grow threatened and endangered mussels from the Upper Tennessee River drainage in Virginia.

UPPER NEW RIVER

This management area is located in two 6th level watersheds in the Upper New River basin. They are the Cripple Creek and Upper Reed Creek watersheds that are discussed in the East Iron Mountain (MA 6) Management Area and New River (MA 3) Management Area, respectively.

Desired Conditions

Bear management is the focus of this area along with continued monitoring and restoration of past mining impacts.

Soil and water quality are restored through soil and water improvement activities. Those improvements that have been implemented continue to be monitored to speed the recovery of the abandoned mines in the area. Place a high priority on maintaining all of these improvements until the lands are fully recovered.

Objectives

MA5-OBJ1 Minimize impacts to soil and water from historic mining activity.

EAST IRON MOUNTAIN

MANAGEMENT AREA 6. EAST IRON MOUNTAIN (MRNRA)

This management area contains the portion of the Mount Rogers National Recreation Area that drains into the Upper New River (except for the High Country). The East Iron Mountain Management Area is in the Southern Blue Ridge Ecological Subsection. Mt. Rogers is one of only twelve national recreation areas within the Nation. Congressionally-designated features includes the National Recreation Area itself and the Little Dry Run Wilderness.

The boundary between the East Iron Mountain Management Area and the High Country Management Area is along Highway 16. The western boundary of this management area is the watershed divide between the New and Holston Rivers.

Physical and Biological Profile

The East Iron Mountain Management Area lying within the Blue Ridge Mountains Ecological Section represents higher site productivity than the Ridge and Valley; but lower than the West Iron Mountain Management Area due to lower precipitation. There is a higher proportion of mesic deciduous forests characterized by historically low levels of wildland fire occurrence, but the southern exposures and ridgetops are dominated by drier oak and oak-pine forest communities. Open woodland conditions were probably more common in these communities prior to successful fire suppression. Pitch and Table mountain pine stands are found on the driest slopes of Iron Mountain and these communities are declining due to the absence of fire in recent years.

The Raven Cliff area contains montane acidic cliffs, a sandstone seepage cliff, and a rare and sensitive karst special geologic area ,as well as a rare Carolina hemlock community, a Southern Appalachian rich cove forest, and a dry calcareous forest.

Forest health concerns include the balsam woolly adelgid since this is one of the few areas on the Forest that has spruce-fir forests. The effects of acidification on tree health

Table 4-6. East Iron Mountain Management Area Prescription Allocation

Code	Description	Acres
1.A	Designated Wilderness	2,900
4.C.1	Geologic and Paleontologic Areas-unsuitable	800
4.D	Botanical and Zoological Areas	500
5.C	Designated Utility Corridors	<100
6.A	Old Growth Forest Communities-Not Disturbance Associated	100
6.B	Old Growth Forest Communities-Fire Dependant	100
6.C	Old Growth Forest Communities-Disturbance Associated	1,600
7.B	Scenic Corridors and Sensitive Viewsheds	4,600
7.D	Concentrated Recreation Zones	400
7.E.1	Dispersed Recreation Areas	500
7.E.2	Dispersed Recreation Areas with Vegetation Management	18,200
7.G	Pastoral Landscapes	1,500
8.A.1	Mix of Successional Habitats in Forested Landscapes	2,200
8.E.1	Ruffed Grouse Habitat Management Area	2,200
9.H	Management, Maintenance, Restoration of Forest Communities	1,400
12.A	Remote Backcountry Recreation-Few Open Roads	2,200
12.B	Remote Backcountry Recreation-Nonmotorized	4,000

are also of prime concern on Mount Rogers. Oak decline, especially on scarlet and black oaks some of which are currently in decline, is a concern elsewhere in this management area. Gypsy moth infestations are expected during the current planning cycle. Hemlock wooly adelgid infestations are beginning to impact this area as well.

Cultural and Economic Profile

The main recreational uses are horseback riding, hunting, fishing, and camping. There are two horse camps within this management area. This management area shares the regionally significant Virginia Highlands Horse Trail with the West End Management Area. The Hussy Mountain campground and the Raven Cliff horse campground are modestly developed areas. Many visitors also disperse camp along Forest Road 14. Comers Rock campground provides recreation for people who want to stay away from the crowds. Raven Cliff Family Campground is located on Cripple Creek. New River Campground is partially developed. None of the campgrounds in this management area provide water, electric or sewer hookups.

The New River Trail State Park, a 57-mile long former railroad grade, is adjacent to the east end of this management area. The New River has been designated an American Heritage river. Water based recreation is popular along the river.

Illegal all-terrain vehicle use on this area is a serious problem that continues to grow annually. The Bournes Branch, Jones Knob, and Ewing Mountain areas are hot spots for this illegal use.

Timber harvesting and mining have been major historical uses for much of this area. Mining for manganese was largely completed around Cripple Creek and Speedwell prior to 1950. Most of these mines have been restored except for one that is located southwest of the town of Cripple Creek.

Many of the lands acquired for the NRA were grazing lands and this pastoral setting is maintained through permitted livestock grazing allotments.

Watersheds

There is one 5th level watershed in the East Iron Mountain Management Area, the Upper New River.

UPPER NEW RIVER

Five 6th level watersheds in the Upper New River basin contain National Forest System lands. Three of these watersheds have National Forest ownership that comprises 10 percent or more of the watershed, New River/Chestnut Creek/Brush Creek, Fox Creek, and Cripple Creek. Portions of the Glade Mountain/Pond Mountain Management Area are located in Cripple Creek. Portions of the High Country Management Area are also located in Fox Creek.

This section of the New River has two hydroelectric dams on it. Bournes Branch on the

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
New River/Chestnut Creek/ Brush Creek 05050001040-N06	90,234	10%	High	Low
Cripple Creek 05050001070-N09	88,729	32%	High	Medium

EAST IRON MOUNTAIN

HIGH COUNTRY

National Forest has many new trails being created illegally for all-terrain vehicles. In addition, the Bournes Branch Trail crosses the creek (a wild trout stream) numerous times. The upper reaches of Bournes Branch receive a lot of horse use on and off the trail in riparian areas. Some of the historic mines areas are still delivering sediment to local streams. Some of the recently acquired grazing lands are in need of riparian area restoration.

Desired Conditions

The focus in this area is primitive to modestly developed recreation; offering areas for people who want to stay away from the crowds. Most of the area is managed for dispersed recreation ranging from Wilderness to backcountry to low level developed campgrounds, many with an emphasis on horse use. A few areas are managed for restoration of woodland and southern yellow pine communities, as well as the creation of early successional and a mix of successional habitats. All of the area is also managed to protect and enhance scenery.

As part of the Mount Rogers National Recreation Area, East Iron Mountain is managed to best provide for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) such management of natural resources as will promote, or is compatible with, and does not significantly impair the purposes for which the NRA was established.

Horse use is maintained and managed to meet the recreational needs of the horseback riders while maintaining the resource needs of sensitive areas. Recreation use in Bournes Branch is managed to reduce impacts on the riparian resources.

Grazing allotments showcase sound range management practices that maintain and restore vegetated riparian areas and stable streambanks, along with a pleasant rural setting reminiscent of an earlier period in time.

Objectives

MA6-OBJ1 Relocate the Bournes Branch Trail to reduce stream impacts.

MA6-OBJ2 Reduce sediment delivery to streams from developed and dispersed recreation facilities, livestock grazing allotments, and historic mining sites.

Management Area Standards

MA6-001 Allow bicycles, horses and pack stock only on open and closed classified roads (unless otherwise posted) and designated trails. Horses and pack stock are allowed immediately adjacent to these trails and roads for the purpose of camping, resting, picnicking, watering, etc. (within a corridor of 300 feet on either side of the designated routes.)

MANAGEMENT AREA 7. HIGH COUNTRY (MRNRA)

This management area is composed of the "high country" of the Mount Rogers National Recreation Area, so called because much of the management area is located at elevations over 4,000 feet. Mount Rogers and Whitetop Mountain, the highest and second highest mountains in the state respectively, are located within this management area. The area lies within the Southern Blue Ridge Ecological Subsection.

Mt. Rogers is one of only twelve national recreation areas in the Nation. Congressionally-designated features includes the National Recreation Area itself, Lewis Fork Wilderness,

Little Wilson Creek Wilderness and the Appalachian National Scenic Trail.

The northern boundary runs along the crest of Straight Mountain, Grave Mountain, and Iron Mountain; the eastern boundary follows State Routes 16 and 730 along the proclamation boundary. The southern boundary follows the proclamation boundary just north of U.S. Highway 58; the western boundary follows U.S. Highway 58 from Green Cove to Bear Tree Gap.

Physical and Biological Profile

The High Country management area contains one of the highest concentrations of rare species and significant plant communities in the Commonwealth. Included is Virginia's only population of the globally rare, Southern Appalachian endemic tree, Fraser fir (*Abies fraseri*). Fraser fir has been identified as a species of concern by the U.S. Fish and Wildlife Service. The spruce-fir and northern hardwood forest communities in the High Country are home for the federally endangered northern flying squirrel, rare salamanders, several globally rare plant species, and what may be one of the best breeding concentrations of forest birds in Virginia, including several that are the southernmost of their global breeding ranges.

This management area is renowned for the high elevation meadows and balds that include numerous rare native herbs, grasses, and shrubs, and also serve as the greatest visual attraction to the Mount Rogers National Recreation Area, offering views in a unique setting not found elsewhere in Virginia. Whitetop Mountain area includes the only Southern Appalachian "grassy bald" community in Virginia. The globally-rare fringed scorpion weed is likely disturbance dependent requiring fire or some other disturbance to maintain long-term viability. These high elevation grassy and shrubby areas are also important habitat for the Appalachian Bewick's wren, alder flycatcher, and golden-winged warbler.

Various rare plant communities such as red spruce-Fraser fir, sub-Alpine beech forest, Southern Appalachian beech gaps, Central Appalachian rich cove forests, high elevation outcrop barrens and boulderfield forests, and Southern Appalachian swamp forest-bog complexes, have been identified within this area. Many plant species reach their northern

Table 4-7. High Country Management Area Prescription Allocation

Code	Description	Acres
1A	Designated Wilderness	9,500
1B	Recommended Wilderness Study Areas	2,100
4A	Appalachian Trail Corridor	1,100
4K3	Mount Rogers Crest Zone Special Area	5,100
4K4	Whitetop Mountain Special Area	5,100
5A	Administrative Sites	<100
5B	Designated Communication Sites	<100
6A	Old Growth Forest Communities-Not Disturbance Associated	<100
7A	Scenic Byway Corridors	100
7B	Scenic Corridors and Sensitive Viewsheds	2,500
7D	Concentrated Recreation Zones	100
7E1	Dispersed Recreation Areas	1,500
7E2	Dispersed Recreation Areas with Vegetation Management	400
7G	Pastoral Landscapes	1,000
8A1	Mix of Successional Habitats in Forested Landscapes	500

or southern extent at Mount Rogers.

The fire regime is infrequent low intensity surface fires (>25 year fire return interval). The fires are small. Natural fire occurence is low and most fires are human-caused. This area has an extensive history of prescribed burning for balds and pasture management beginning in the late 1970's to the present. Approximately 700-900 acres have been burned annually using a three year rotation on balds around Mount Rogers and an annual rotation at Whitetop Mountain. The purpose of these burns has been to retard the encroachment of woody vegetation into the balds stimulate the grass/forb component.

There are also individual stems and scattered clumps of northern hardwood species such as yellow birch, sugar maple, and yellow buckeye that have died in recent years. The total picture as to the cause of this mortality is unclear at present. Various research and monitoring projects are underway to help determine the cause of this mortality. Some of the causes may be climatological factors such as drought, ice damage, and hurricanes, or insect damage, pathogens such as *armillaria* (root disease), historical grazing, or air pollution in the form of nitrates, sulfates, and ozone damage or a combination of many of these factors.

The Balsam wooly adelgid has infested almost all Fraser fir stands on Cabin Ridge, Wilburn Ridge, and Pine Mountain. Mortality has been extensive in mature trees, saplings and seedlings. Most mature trees are dead on Mount Rogers proper, primarily due to their age. Here the seedlings and saplings are still alive and growing except on the lower slopes adjacent to the areas mentioned above. There are isolated stems of Fraser fir still alive that appear to be resistant to the adelgid within the areas of greatest mortality.

Cultural and Economic Profile

This management area contains the high elevation meadows and balds that are the central attraction for high numbers of visitors to the National Recreation Area annually. The bald areas on Whitetop Mountain and in the Elk Garden area which lies between Mount Rogers and Whitetop, were recorded as open meadows in the mid-1700's. Both are considered naturally-occurring, but it is not certain how they evolved to their present state. The open balds around Mount Rogers were created by humans from intensive logging and the subsequent indiscriminate burning and grazing prior to Forest Service acquisition. These areas, kept open through grazing by ponies and cattle, the use of prescribed fire, and manual brush control offer outstanding views in a unique setting not found elsewhere in Virginia. The most popular trails in the area include the Appalachian National Scenic Trail, Virginia Highlands Horse Trail and Rhododendron Gap trail. Approximately 30 other trails also provide dispersed recreation opportunities on over 100 miles.

Whitetop Mountain is accessible via Forest Service Road 89. Whitetop has a history of recreation use dating back to early 1900's when the mountain was in private ownership. While in private ownership, a toll was charged to access the summit and a dance hall. Today, the road is very popular with sightseers and hikers.

Day hiking, backpacking, horseback riding and pony watching are the primary dispersed recreation activities, with hunting, fishing and blueberry picking also being primary uses seasonally. Developed recreation areas include Grindstone Campground, Fairwood Horse Camp, Fairwood Picnic Area, and Fairwood Horse Livery, all of which are located along State Route 603. Grayson Highlands State Park is immediately adjacent to the management area. Several festivals are held there each year, as well as the annual Wilburn Ridge Pony Association's pony auction, that attracts thousands of people to the area.

Big Wilson Creek and Fox Creek receive large number of anglers annually from both Virginia and neighboring states. Hunters in pursuit of deer, turkey, grouse and various small game

animals flock to the forest within this area each fall and spring.

Land uses in the three counties in this management area are mostly agricultural. The Christmas tree and roping/greenery industry has been increasing dramatically in the last 10 years. There are approximately 150 Christmas tree growers producing trees on 4,000 non-Forest Service acres. Pasture land continues to be converted to Christmas tree production.

Watersheds

This Management Area is one of two on the Forest that is not defined by watershed divides. This Management Area is located in two 5th level watersheds, South Fork Holston River and Upper New River. This area supports the Crest Zone, or High Country, of Mount Rogers; the highest recreation use area on the Forest.

SOUTH FORK HOLSTON

This management area is located in one 6th level watershed in the South Fork Holston basin: South Fork Holston River/Whitetop Laurel Creek. This watershed is described in the West Iron Mountain Management Area.

UPPER NEW RIVER

This management area is located in three 6th level watersheds in the Upper New River basin, Helton Creek/Big Horse Creek, Upper New River/Wilson Creek, and Fox Creek. A portion of the East Iron Mountain Management Area (MA 6) is also located in the Fox Creek watershed.

High country soils are very unique to the region and the Southern Appalachians. Soils at these higher elevations have formed in “frigid” conditions and are characteristic of soils found much further north in New England. These soils and the unique climate and geology help produce the many special ecosystems in the area. Air quality concerns include extremely low pH in cloud water and ground level ozone at higher elevations. The area also supports a wide diversity of salamanders. On private lands there are many Christmas tree farms and their associated fertilization, herbicide, and pesticide use. The Wilson Creek watershed has the lowest road density of any watershed on the Forest. It is also adjacent to Grayson Highlands State Park which provides additional recreation pressure on the area. Concerns in Fox Creek include impacts from permitted grazing, livery, and the horse camp along Fox Creek. Fox Creek riparian work to stabilize banks and revegetate from historic private land use prior to National Forest acquisition continues. Water in Fox Creek is high in coliform from livestock and horse camp use.

6th Level Watersheds	Total Acres	% National	Non-Point Source	Natural Heritage
Helton Creek/Big Horse	25,078	22%	Medium	Medium
Upper New River/Wilson	40,818	13%	Medium	High
Fox Creek	48,845	23%	Medium	Medium

HIGH COUNTRY

WEST IRON MOUNTAIN

Desired Conditions

Management focuses on the special biological and recreational attributes of the High Country, almost entirely allocated to special area management prescriptions and Wilderness. Rare communities and the habitats of listed and rare species are protected and expanded.

As the heart of the Mount Rogers National Recreation Area, the High Country is managed to best provide for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) such management of natural resources as will promote, or is compatible with, and does not significantly impair the purposes for which the NRA was established.

Horse use is maintained and managed to meet the recreational needs of the horseback riders while maintaining the resource needs of sensitive areas.

Grazing is used to control vegetation. Allotments showcase sound range management practices that preserve rare communities, maintain and restore vegetated riparian areas and stable streambanks, along with a pleasant rural setting reminiscent of an earlier period in time.

Objectives

MA7-OBJ1 Relocate the Fox Creek Horse Camp to reduce stream impacts.

Management Area Standards

MA6-001 Allow bicycles, horses and pack stock only on open and closed classified roads (unless otherwise posted) and designated trails. Horses and pack stock are allowed immediately adjacent to these trails and roads for the purpose of camping, resting, picnicking, watering, etc. (within a corridor of 300 feet on either side of the designated routes.)

MANAGEMENT AREA 8. WEST IRON MOUNTAIN (MRNRA)

West Iron Mountain contains the portion of the Mt. Rogers National Recreation Area that drains into the South Fork Holston River, except for the High Country. It lies within the Southern Blue Ridge Ecological Subsection. Mt. Rogers is one of only twelve national recreation areas within the Nation. Congressionally-designated features includes the National Recreation Area itself and the Appalachian National Scenic Trail. The Virginia Creeper National Recreation Trail is also located in the area.

The boundary between the West Iron Mountain Management Area and the High Country Management Area is along U.S. 58 from Green Cove to Beartree Gap and along the ridge of Iron Mountain.

Physical and Biological Profile

The West Iron Mountain Management Area lying within the Blue Ridge Mountains Ecological Section receives notably higher precipitation than East Iron Mountain and consequently has high site productivity and a higher proportion of mesic deciduous forests. The primary forest communities consist of Dry Mesic Oak, Mixed Mesophytic Hardwoods, and Northern Hardwoods. Northern hardwoods are not typical within this ecological subsection.

The federally threatened Virginia round-leaf birch is located within the headwaters of the

South Fork Holston River drainage. Several plantations aimed at propagating this species are also located within this drainage. Other rare communities and special biological areas include a montane basic woodland at Whitetop Laurel slopes, beech gaps along Pine and Iron Mountains, Southern Appalachian high-elevation boulderfield forest, and Little Laurel Creek old growth. Some important old field habitats exist within this area also.

Whitetop Laurel Creek and the headwaters of the South Fork of Holston River are two popular trout streams in Virginia listed in some publications as "Blue Ribbon Trout Streams".

Forest health concerns include the balsam woolly adelgid since this is one of the few areas on the Forest that has spruce-fir forests. The effects of acidification on tree health are also of prime concern on Mount Rogers. Oak decline, especially on scarlet and black oaks some of which are currently in decline, is a concern elsewhere in this management area. Gypsy moth infestations are expected during the current planning cycle. Hemlock wooly adelgid infestations are beginning to impact this area as well.

Cultural and Economic Profile

Regionally popular and heavily publicized trails within this area are the Virginia Highlands Horse Trail and the Whitetop Laurel Accessible Fishing Trail; trails with national significance are the Virginia Creeper National Recreation Trail and the Appalachian National Scenic Trail. Unique to this area are motorcycle trails in the Feathercamp area, one of only two areas across the national forest.

The trail which gets the most use on the Mount Rogers National Recreation Area is the Virginia Creeper Trail. This trail, once a railroad line of the same name, now has no less than four businesses out of Damascus and Abingdon completely reliant on the trail. These businesses provide bike rentals and shuttle services to Virginia Creeper Trail users.

Table 4-8. West Iron Mountain Management Area Prescription Allocation

Code	Description	Acres
2C3	Eligible Recreational River	1,200
4A	Appalachian Trail Corridor	2,600
4D	Botanical and Zoological Areas	<100
4F	Scenic Areas	200
4K5	Whitetop Laurel Special Area	4,200
5C	Designated Utility Corridors	<100
6A	Old Growth Forest Communities-Not Disturbance Associated	200
6B	Old Growth Forest Communities-Fire Dependant	<100
6C	Old Growth Forest Communities-Disturbance Associated	700
7A	Scenic Byway Corridors	1,700
7B	Scenic Corridors and Sensitive Viewsheds	4,200
7D	Concentrated Recreation Zones	2,100
7E1	Dispersed Recreation Areas	1,300
7E2	Dispersed Recreation Areas with Vegetation Management	4,700
7G	Pastoral Landscapes	1,000
8A1	Mix of Successional Habitats in Forested Landscapes	4,400
8C	Black Bear Habitat Management Areas	5,300
9H	Management, Maintenance, Restoration of Forest Communities	1,900
12A	Remote Backcountry Recreation-Few Open Roads	5,200
12B	Remote Backcountry Recreation-Nonmotorized	7,700

WEST IRON MOUNTAIN

This management area is the gateway to the National Recreation Area's High Country. People travel through the West End Management Area to the High Country and as a result, bring high recreation use and pressure to the area. Beartree Campground and Day Use area, Hurricane Campground, Raccoon Branch Campground are located in this area.

Some of the best trout fishing on the Forests exists within this area. Various small businesses in Abingdon, Glade Springs, Chilhowie, Damascus, Konnarock, Thomas Bridge, Sugar Grove and Troutdale earn much of their annual profits from sales related to the fishing of these streams.

Watersheds

There is one 5th level watershed in the West Iron Mountain Management Area: South Fork Holston River.

SOUTH FORK HOLSTON RIVER

Two 6th level watersheds in the South Fork Holston basin contain National Forest System lands. They are Upper South Fork Holston River and South Fork Holston River/Whitetop Laurel Creek. Portions of the Glade Mountain/Pond Moutain Management Area and High Country Management Area are also located in the Upper South Fork Holston watershed.

Whitetop Laurel is eligible as a "recreational river." It supports the greenfin darter, sharphead darter, Tennessee dace, and little-wing and slabside pearly mussels. There is a lot of bicycle and hiking use on the Virginia Creeper Trail, an old railroad grade along the stream. There has been a big increase in horse use and private horse outfitters. Undesignated horse trails are a problem as more and more new trails are appearing.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Upper South Fork Holston River 06010102010-O01	62,722	48%	Medium	Low
South Fork Holston River/ Whitetop Laurel Creek 06010102010-O02	76,653	41%	Medium	High

Desired Conditions

The emphasis for this Management Area is on providing a wide variety of recreation experiences. These include hiking, bicycling, motorized trail use, backcountry hiking, horseback riding, camping, fishing and hunting all at a very high level of quality.

As part of the Mount Rogers National Recreation Area, West Iron Mountain is managed to best provide for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) such management of natural resources as will promote, or is compatible with, and does not significantly impair the purposes for which the NRA was established.

Horse use is maintained and managed to meet the recreational needs of the horseback riders while maintaining the resource needs of sensitive areas.

Allotments showcase sound range management practices that maintain and restore vegetated riparian areas and stable streambanks, along with a pleasant rural setting reminiscent of an earlier period in time.

Objectives

MA8-OBJ1 Complete the restoration of the trestles on the Virginia Creeper Trail within the next ten years.

MA8-OBJ2 Minimize impacts to soil and water quality from past mining activity.

Management Area Standards

MA8-001 Allow bicycles, horses and pack stock only on open and closed classified roads (unless otherwise posted) and designated trails. Horses and pack stock are allowed immediately adjacent to these trails and roads for the purpose of camping, resting, picnicking, watering, etc. (within a corridor of 300 feet on either side of the designated routes.)

MANAGEMENT AREA 9. CLINCH RIVER

This management area is located on the Clinch Ranger District and is the portion draining into the Clinch River. It lies in the Eastern Coal Fields Ecological Subsection of the Northern Cumberland Mountain Section. Although considered part of the Northern Cumberland Mountain Section, the area lies within a transition zone between this section and the Appalachian Ridge and Valley Section. There are no Congressionally designated areas.

Physical and Biological Profile

The Northern Cumberland Mountain Section this management area lies within is noted for its high site productivity and vast mineral resources. Geologically, this is the youngest area on the Jefferson consisting of plateau uplands incised with a dendritic stream pattern. Biologically, it is dominated by rich mixed mesophytic cove forests and drier oak ridges.

Eleven rare communities and special biological areas totaling 3,600 acres have been identified in this management area. Two medium sized old growth patches (Lonesome Ridge mixed/western mesophytic and Flannery Ridge dry mesic oak communities) are found on rocky, steep slopes which were inaccessible by early 1900's logging standards.

Within this management area, the Environmental Protection Agency has identified the Clinch River as the most biologically diverse aquatic system in the Nation. Globally significant mussels occupy the Clinch River, however they do not occur in the streams on the national forest.

Cultural and Economic Profile

Outdoor recreation is an important use of NFS land in this area. Some of the most popular recreation sites on the district are in this management area, including: Bark Camp, High Knob, High Knob Tower, Guest River Gorge, Flatwoods Picnic, Chief Benge Scout Trail, Wallen Ridge Trail, and Little Stony National Recreation Trail. Hunting for deer, turkey, and ruffed grouse and trout fishing are the most popular forms of recreation.

This management area is located in the "coalfields region" of southwestern Virginia, which has a history of resource extraction and exploitation. In the late 19th and early 20th centuries, exploitive logging and farming of mountainsides threatened the watersheds of the major rivers originating in this region, and the Jefferson National Forest was established to protect watersheds. Starting during World War I, the production of coal and the pressure of that demand on the coal reserves in southwest Virginia continued the

CLINCH RIVER

Table 4-9. Clinch River Management Area Prescription Allocation

Code	Description	Acres
2C3	Eligible Recreational River	2,400
4D	Botanical and Zoological Areas	1,700
4F	Scenic Areas	800
5A	Administrative Sites	200
5B	Designated Communication Sites	<100
6A	Old Growth Forest Communities-Not Disturbance Associated	<100
6B	Old Growth Forest Communities-Fire Dependant	<100
6C	Old Growth Forest Communities-Disturbance Associated	3,600
7B	Scenic Corridors and Sensitive Viewsheds	2,100
7D	Concentrated Recreation Zones	500
7E2	Dispersed Recreation Areas with Vegetation Management	5,000
8A1	Mix of Successional Habitats in Forested Landscapes	15,700
8B	Early-Successional Habitat Emphasis	3,400
8E1	Ruffed Grouse Habitat Management Area	2,800
8E4b	Indiana Bat Secondary Cave Protection Area	600
9A1	Source Water Protection Watersheds	2,800
9F	Rare Communities	1,900
9G1	Maintenance and Restoration of Bottomland Hardwoods	<100
9H	Management, Maintenance, Restoration of Forest Communities	2,700
10B	High Quality Forest Products Emphasis	5,300
12B	Remote Backcountry Recreation-Nonmotorized	3,000

exploitation of non-National Forest System lands in the area. Due to the past history of the area, the Forest is considered a "forest oasis" amongst all of this activity by the local citizens.

Over the last twenty years timber markets have been strong and wood products industries have provided stable employment and income. Site indices for oak are typically 100 or higher, making this the best sawtimber producing area on the JNF. Due to high site productivity, National Forest lands have been looked to as a primary source for high quality sawlogs in this area.

The majority of the mineral ownership in this management area is in reserved or outstanding rights. The Coeburn Gas Field (one of the largest in southwest Virginia) is located in this management area.

Watersheds

There is one 5th level watershed in the Management Area: Upper Clinch River.

UPPER CLINCH

Six 6th level watersheds in the Upper Clinch basin contain National Forest System lands. Five of these watersheds have National Forest ownership that comprises 10 percent or more of the watershed, Clinch River/Little Stony Creek, Guest River, Stony Creek, Clinch River/Stock Creek/Cove Creek, and North Fork Clinch River.

There are a number of strip mines in the upper part of the Clinch/Little Stony and Guest River watersheds. The Tippecanoe darter, emerald shiner, steelcolor shiner and many species of mussels occur in the Clinch River. The Clinch and Guest River are Physical and

Chemical Condition Class 3 watersheds. Little Stony, Guest River and Clinch River are eligible as a "recreational rivers." The road density in the Little Stony Creek and Stock Creek/Cove Creek watersheds are two of the highest on the Forest. Road density is also high in the Guest River Stony Creek, and North Fork Clinch River watersheds. There are several impaired stream segments due to mining and residential impacts on the Guest River. Virginia spirea is known to occur along the Guest River. Natural gas exploration and development is common in the area. There is an impaired stream reach on Stock Creek due to urban impacts. The North Fork Clinch has a Physical Condition Class of 3. It supports populations of Tennessee heelsplitter south of Duffield and freshwater snails in the Jasper area.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Clinch River/Little Stony Creek 06010205040-P09	95,495	12%	Medium	High
Guest River 06010205040-P11	64,180	17%	Medium	Medium
Stony Creek 06010205040-P12	26,616	55%	Low	Medium
Clinch River/Stock Creek/ Cove Creek 06010205050-P13	77,076	12%	Medium	High
North Fork Clinch River 06010205050-P15	53,563	14%	Medium	Low

Desired Conditions

The emphasis is to protect habitat for rare species, particularly aquatic species. This includes two Wild and Scenic River study areas, old growth, rare community and biologic areas. While protecting that habitat, the good access and high site productivity in Big Flat Top, Stone Mountain, Stock Creek, Cove Creek, and Wallen Ridge are used to emphasize wildlife habitat management with creation of a mix of successional habitat. The High Knob to Bark Camp area is managed to enhance its recreation value. Devils Fork is managed for backcountry recreation.

The aquatic diversity of fish and mussels are maintained, enhanced and restored into previously occupied habitat where suitable. Beneficial uses are maintained or improved while recreation use continues and while natural gas exploration and development proceeds. Roads are located and maintained so as to maintain slope stability. Forest Service activities will not contribute to impaired water segments. The landslide areas in lower Stony Creek are managed to reduce further impacts and encourage rapid recovery.

Objectives

There are no objectives specific to this area.

MANAGEMENT AREA 10. POWELL RIVER/STONE MOUNTAIN

This management area is located on the Clinch Ranger District and is the portion draining into the Powell River. It lies in the Eastern Coal Fields Ecological Subsection of the Northern Cumberland Mountain Section. There are no Congressionally designated areas.

Physical and Biological Profile

Although the Powell River/Stone Mountain Management Area is also found within the Cumberland Mountains Ecological Section, the landform and geology closely resemble the Ridge and Valley Section. Both Powell and Stone Mountain are long narrow ridges flanking the Powell River valley. Site productivity is moderate to high due to a higher proportion of limestone.

Limestone geology is known for its cave and karst features and this management area contains Kelly and Rocky Hollow caves with known populations of the federally listed Indiana bat. Kelly Cave is located on national forest on Stone Mountain and Rocky Hollow is on private land on Powell Mountain. The Jefferson National Forest is in the process of acquiring the lands surrounding Rocky Hollow.

Rare communities and special biological areas include rock outcrops and cliffs at Stone Mountain/Pine Mountain Cliffs, dry calcareous forest at Little Stone Mountain, eastern hemlock old growth communities in Dark Hollow and Roaring Branch, the federally listed threatened small-whorled pogonia at Keokee Lake, and Central Appalachian limestone/ dolomite woodlands and Central Appalachian rich cove forest at Cliff Mountain.

The Powell River was designated by EPA (Environmental Protection Agency) as the second most biologically diverse aquatic system in the nation.

Cultural and Economic Profile

Roaring Branch is the only river eligible for Wild and Scenic status as a “Wild” river. Roaring Branch is also a special biological area due to the distinctive hemlock component in the riparian area. Roaring Branch is accessed by the Stone Mountain Trail.

Table 4-10. Powell River/Stone Mountain Management Area Prescription Allocation

Code	Description	Acres
0B	Custodial Management-Small Land Areas	200
1B	Recommended Wilderness Study Areas	3,300
2C1	Eligible Wild River	900
4D	Botanical and Zoological Areas	1,100
5B	Designated Communication Sites	<100
5C	Designated Utility Corridors	200
6C	Old Growth Forest Communities-Disturbance Associated	500
7B	Scenic Corridors and Sensitive Viewsheds	2,000
7D	Concentrated Recreation Zones	<100
7E1	Dispersed Recreation Areas	700
8A1	Mix of Successional Habitats in Forested Landscapes	3,400
8E1	Ruffed Grouse Habitat Management Area	700
8E4a	Indiana Bat Primary Cave Protection Area	400
8E4b	Indiana Bat Secondary Cave Protection Area	3,300
9A1	Source Water Protection Watersheds	300
9F	Rare Communities	100

This management area is located in the "coalfields region" of southwestern Virginia, which has a history of resource extraction and exploitation. In the late 19th and early 20th century, exploitive logging and farming of mountainsides threatened the watersheds of the major rivers originating in this region, and the Jefferson National Forest was established to protect watersheds. Starting during World War I, the production of coal and the pressure of that demand on the coal reserves in southwest Virginia continued the exploitation of non-National Forest lands in the area. Due to the past history of the area, the Forest is considered a "forest oasis" amongst all of this activity by the local publics.

Over the last twenty years timber markets have been strong and wood products industries have provided stable employment and income. Due to high site productivity, longer rotations, and sound, sustainable forest management practices, National Forest lands have been looked to as a primary source for high quality sawlogs in this area.

The majority of the mineral ownership in this management area is in reserved or outstanding rights.

Watersheds

There is one 5th level watershed in the Powell River/Stone Mountain Management Area: Powell River.

POWELL RIVER

Five 6th level watersheds in the Powell River basin contain National Forest System lands. Two of these watersheds have National Forest ownership that comprises 10 percent or more of the watershed, South Fork Powell River and North Fork Powell River.

Strip mines are abundant in these watersheds and one above the South Fork Powell River. South Fork Powell River watershed also has the highest road density on the Forest, but there is not much National Forest land in the watershed. The entire Powell River from Big Stone Gap to Pennington Gap is impaired.

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
South Fork Powell River 06010206010-P18	26,143	16%	Low	Medium
North Fork Powell River 06010206010-P20	56,975	10%	High	Low

Desired Conditions

Most of this Management Area emphasizes dispersed or remote recreation with the Cave Springs wilderness study and Roaring Fork Wild and Scenic Study areas along with the existing Keokee Land and Cave Springs recreation areas.

The aquatic diversity of fish and mussels are maintained, enhanced and restored into previously occupied habitat where suitable. Beneficial uses are maintained or improved while recreation use continues and while natural gas exploration and development proceed. Roads are located and maintained so as to maintain slope stability. Road maintenance and watershed improvement funding are emphasized due to high road density in combination with high aquatic diversity. Forest Service activities will not contribute to impaired water segments.

Objectives

There are no objectives specific to this area.

MANAGEMENT AREA 11. PINE MOUNTAIN

This management area contains the northernmost portion of the Clinch Ranger District. It lies in the Eastern Coal Fields Ecological Subsection of the Northern Cumberland Mountain Section. The 800-acre National Forest Butler tract (in Kentucky) is also included in this management area and is located on the far southwest side within the Cumberland River watershed.

Physical and Biological Profile

The geology of Pine Mountain is unique, since it is a single, long (125 miles) mountain ridge resulting from geologic events, which have exposed rock formations that normally are 2,000 feet or more below the surface. Although considered part of the Northern Cumberland Mountain Section, the mountain ridge's vegetation is more typical of that found in the Ridge and Valley Section. There are no Congressionally designated areas.

The two most dominant water features are North Fork of Pound Lake and Flannigan Lake. North Fork of the Pound is on national forest and Flannigan is a U.S. Army Corp of Engineers impoundment.

Rare communities and special biological areas include a rocky bar and shore community at Chimney Cliffs and Russell Fork, low elevation acidic outcrop barrens at Skegg Woodlands and Bryant Gap, an oak-hickory woodland/savanna, a montane basic woodland, a pine oak/heath woodland, a seepage marsh.wet meadow at Indian Grave Gap, Pound River, a Southern Appalachian high-elevation boulderfield forest, and a population of the eastern small-footed bat in Pine Mountain Tunnel. Poor Fork (Butler Tract) is a headwater system for the Cumberland River and supports trout and blackside dace, a listed threatened and endangered fish species.

Cultural and Economic Profile

The area includes the North Fork of the Pound inventoried roadless area, the North Fork of Pound Recreation Area complex consisting of Cane Patch Campground, Phillips Creek, Bee Bottom Picnic, Laurel Creek Primitive Campground, and Wise/Pound boat launches,

Table 4-11. Pine Mountain Management Area Prescription Allocation

Code	Description	Acres
0B	Custodial Management-Small Land Areas	500
4C1	Geologic and Paleontologic Areas-unsuitable	700
4D	Botanical and Zoological Areas	700
4K6	North Fork of Pound Special Area	5,500
5C	Designated Utility Corridors	100
6C	Old Growth Forest Communities-Disturbance Associated	300
7B	Scenic Corridors and Sensitive Viewsheds	100
7D	Concentrated Recreation Zones	<100
7E2	Dispersed Recreation Areas with Vegetation Management	4,100
8A1	Mix of Successional Habitats in Forested Landscapes	3,500
9A1	Source Water Protection Watersheds	3,400
9F	Rare Communities	1,100

and Cumberland Mountain Trail.

The North Fork of Pound roadless area currently is under a lease for natural gas. The lease predates the roadless determination and development of the lease is likely.

This management area is located in the "coalfields region" of southwestern Virginia, which has a history of resource extraction and exploitation. In the late 19th and early 20th century, exploitive logging and farming of mountainsides threatened the watersheds of the major rivers originating in this region, and the Jefferson National Forest was established to protect watersheds. Starting during World War I, the production of coal and the pressure of that demand on the coal reserves in southwest Virginia continued the exploitation of non-National Forest lands in the area. Due to the past history of the area, the Forest is considered a "forest oasis" amongst all of this activity by the local citizens.

Over the last twenty years timber markets have been strong and wood products industries have provided stable employment and income. Due to high site productivity, longer rotations, and sound, sustainable forest management practices, National Forest lands have been looked to as a source for high quality sawtimber in this area.

The majority of the mineral ownership in this management area is Federal ownership the majority of which is currently under lease.

Watersheds

There is one 5th level watershed in the Pine Mountain Management Area: Upper Levisa River. However, the 800 acre National Forest Butler tract is also included in this area and is located on the far southwest side within the Cumberland River watershed; flowing into the Tennessee River system.

UPPER LEVISA

Two 6th level watersheds in the Upper Levisa basin contain National Forest System lands. Of these, only the Pound River has National Forest ownership that comprises 10 percent or more of the watershed

6th Level Watersheds	Total Acres	% National Forest	Non-Point Source Assessment	Natural Heritage Rank
Pound River 05070202050-Q13	86,551	20%	High	Medium

About 30 to 40 percent of the watershed is in strip mines. Segments of the North Fork of the Pound are impaired due to urban and acid mine drainage. Two flood control dams are located in the watershed, Flannagan and North Fork of Pound. Russell Fork is eligible as a “recreational river.”

Desired Conditions

This Management Area is generally managed for dispersed recreation. The North Fork of Pound is managed to maintain its remote characteristics to the extent possible while allowing the development of a natural gas lease for the area. A portion of Pine Mountain is managed to create a mix of wildlife habitat. The rest of the Management Area is managed for municipal watershed management and management of rare communities, biological areas and geological areas.

Beneficial uses of potable water in the municipal watershed are maintained or improved

PINE MOUNTAIN

while recreation use around North Fork of Pound Reservoir meets demand and contributes to the economic health of the community. Beneficial uses of potable water in the municipal watershed are maintained or improved while natural gas exploration and development proceed. New road construction is designed with future recreation trail use in mind to minimize disturbance from access.

Within the North Fork Pound roadless area, access is provided for intermittent minerals management activities and primarily maintained for non-motorized recreation in the long-term. Manage horse use to meet the recreational needs of the horseback riders while maintaining the resource needs of sensitive areas.

Objectives

There are no objectives specific to this area.

Management Area Standards

MA11-001 Allow horses and pack stock only on open and closed classified roads (unless otherwise posted) and designated trails. Horses and pack stock are allowed immediately adjacent to these trails and roads for the purpose of camping, resting, picnicking, watering, etc. (within a corridor of 300 feet on either side of the designated routes.)

Natural gas well on Clinch Ranger District

IMPLEMENTATION, MONITORING, & EVALUATION

CHAPTER 5

INTRODUCTION

Chapter 5 provides information to guide putting the Revised Forest Plan into practice, or implemented. One of the most important aspects of implementing the Forest Plan is monitoring and evaluation. Monitoring and evaluation provide information to determine whether programs and projects are meeting Forest Plan direction, and whether the Plan should be amended or revised. This Chapter establishes Monitoring Questions that are to be answered over the course of Forest Plan implementation.

The last section of this Chapter discusses how this Forest Plan may be amended or revised as a result of this monitoring and evaluation.

IMPLEMENTATION

The approval of this Revised Forest Plan establishes direction so that all future decisions in the planning area will include an "interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other sciences" (16 USC 1604(b)). The Forest Plan will be implemented through a series of project-level decisions based on appropriate site-specific environmental analysis and disclosure to assure compliance with the NEPA. The NEPA analysis process begins once these individual projects have been identified.

Common project-level decisions include whether or not, and if so, in what way, timber will be harvested in a given area, a campground will be constructed, or a fisheries structure will be installed. The form of documentation for such analysis will be consistent with the Council of Environmental Quality NEPA Regulations [40 CFR 1500-1508], and Forest Service Manual and Handbook procedures.

The Forest Plan does not contain a commitment to the selection of any specific project. Instead, it determines what types of projects are permissible and under what conditions on different portions of the Forest. For instance, the Forest Plan may determine that portions of specific management areas are suitable for timber production. It does not make decisions on the specifics of any particular timber sale that could occur on lands suitable for timber production. Such decisions must be based on appropriate site-specific analysis and appropriate disclosure during project-level analysis.

The projects chosen to implement this Forest Plan should be those which lead to achieving goals, objectives, and the desired future conditions described in Chapters 2, 3, and 4. There is, however, no specific requirement that a project must contribute to achievement of the goals, objectives, and desired future conditions. Any project that complies with the standards in Chapters 2, 3, and 4 of this document may be selected for implementation. Project-level environmental analyses will tier to the Forest Plan and Final Environmental Impact Statement (FEIS). The FEIS for the Forest Plan is an aid to project-level NEPA compliance.

As described in the Monitoring and Evaluation section of this Chapter, the Interdisciplinary Team will evaluate how the selection of projects is achieving the goals, objectives, and desired future conditions of the Forest Plan.

BUDGET

The Forest Plan provides the basis for developing multi-year program budget proposals. The budget is used for requesting and allocating the funds needed to carry out the planned management direction. Accomplishment of the annual program is the incremental implementation of the management direction in the Forest Plan. Depending on final budgets, outputs and activities in individual years may be significantly different from the objectives in Chapters 2 and 4. Cost and accomplishment data will be utilized to update and revise databases and modify budget proposals.

The Forest program development and budget process consists of evaluating fixed and variable cost activities, and capital investment projects. Fixed cost activities include those necessary to ensure public safety and environmental protection, and to maintain existing capital assets at certain levels of service and availability. Additionally, long-term management planning and resource inventories, general administration (overhead) costs, and other costs that cannot be assessed on a per-unit basis are included in fixed cost activities.

Variable cost activities generally include those with outputs or uses that can be controlled or changed. For instance, certain costs may vary relative to the miles of trail construction proposed in an alternative. Capital investments entail monies spent to provide or improve a facility or product for continued or future use.

In 1995, the George Washington and Jefferson National Forests were administratively combined. The annual budget received is for both National Forests. The estimated budget for this revised Forest Plan is available in Chapter 3 of the FEIS under the Social/ Economic section and in the Process Records.

MONITORING AND EVALUATION

Monitoring and evaluation provide information to determine whether programs and projects are meeting Forest Plan direction, and whether the cost anticipated to implement the Forest Plan coincides with actual costs. Monitoring and evaluation is required by NFMA implementing regulations (36 CFR 219.12(k)) to determine whether requirements of the regulations and Forest Plan are being met.

This Chapter establishes Monitoring Questions that are to be answered over the course of Forest Plan implementation. Monitoring questions address whether the desired conditions, goals and objectives of the Forest Plan are being met and whether Forest Plan standards are effective. Monitoring Questions are part of the Forest Plan and are stated in terms that will direct *what* will be monitored, but are not so specific as to address *how* monitoring will be accomplished.

Monitoring Questions will be further refined during Forest Plan implementation into Monitoring Elements and Task Sheets, which are more detailed, specific and measurable than the Monitoring Questions themselves. Monitoring Elements and Task Sheets may be modified and prioritized to guide monitoring activities over the course of Forest Plan implementation. The Monitoring Summary Table and sample Task Sheet (Appendix G) demonstrate the relationships between Forest Plan Goals, Objectives, Standards and Monitoring Questions, and indicate the nature of Monitoring Elements and monitoring details that are to be further developed during Forest Plan implementation. The Monitoring Summary Table and sample Task Sheet are presented here only for information and may be modified as needed to address changes in needs, priorities, availability of personnel and funding.

The concept of adaptive management is foundational for planning and Forest Plan implementation in a dynamic environment. Regulations require that Forest Plans be revised periodically (36 CFR 219.10(g)). However, Forest Plans may need to be more dynamic to account for changed resource conditions (such as large storms or insect outbreaks), new information or findings of science, or new regulations or policies. An effective monitoring and evaluation program is essential for determining when these needs may exist and for leading to quick resolution of a need for change.

The Monitoring Questions were developed to address three types of monitoring:

- Implementation monitoring: addressing whether the Forest Plan is being carried out.
- Effectiveness monitoring: dealing with whether desired conditions are resulting.
- Validation monitoring: determining if information used in developing the Forest Plan has changed.

Monitoring and evaluation provide information that can be used to keep Forest Plans current. Key results and findings will be used to determine if changes are needed in goals, objectives, standards, the monitoring questions themselves or research needs.

Monitoring and evaluation are distinct activities. The monitoring phase generally includes the collection of data and information, either by observation, direct measurement or compiling data from appropriate sources. Evaluation is the analysis of this data and information, and is used to assess if the Forest Plan is being implemented correctly and whether it needs to be changed. Forest Plan Monitoring and Evaluations will be reported annually in the Forest Monitoring and Evaluation Report.

Monitoring and evaluation may lead to adjustments of programs, projects or activities, changes or amendment to the Forest Plan itself or used to recommend changes in laws, regulations, and policies that affect both the Forest Plan and project implementation (FSM 1922.7).

Forest Plan amendments and revisions should be responsive to changes that affect the Forest Plan, and may be needed at any time if a Forest Plan becomes out of date in some way. Within an adaptive management framework, the need to amend or revise the Forest Plan may result from:

- Recommendations of an interdisciplinary team, based on evaluation and monitoring results;
- Changes in agency policy and regulations;
- Planning errors found during Forest Plan implementation;
- Changes in physical, biological, social, or economic conditions.

The evaluation of findings under the following Monitoring Questions will lead forest managers to these determinations.

MONITORING QUESTIONS

1. Are rare ecological communities being protected, maintained, and restored?

A Forest Plan goal, along with related objectives and standards, is designed to maintain and restore rare communities. To monitor accomplishment of these provisions and the effects

MONITORING AND EVALUATION

that overall Forest Plan implementation will have on rare communities, trends in number of occurrences, locations, and conditions, and effects of maintenance and restoration activities will be tracked.

MONITORING QUESTIONS

2. Are landscape and stand level composition, structure, and function of major forest communities within desirable ranges of variability?

Success in maintaining and restoring composition, structure, and function of forest ecosystems within desired ranges of variability is reflected by both changes in forest condition and by levels of management and other effects that are shaping these communities. Monitoring will include tracking the abundance of major forest cover/community types and levels of management activities conducted to maintain and restore desired conditions. Population trends and habitats of Management Indicator Species will be monitored to help indicate effects of national forest management within selected communities.

Table 5-1. Management Indicator Species Selected For Monitoring Question 2

Management Indicator Species	Reasons for Selection
Hooded warbler	Changes in presence and abundance of hooded warblers in mature mesic deciduous forests will be used to help indicate the effectiveness of management at providing dense understory and midstory structure within these forest communities.
Pine warbler	Trends in presence and abundance of these species in mature pine forest will be used to help indicate effectiveness of management at maintaining these communities on the landscape.
Scarlet Tanager	Trends in presence and abundance of these species in drier mid- and late-successional oak and oak-pine forests would be used to help indicate effectiveness of management at establishing desired conditions in these forest communities.

Table 5-2. Management Indicator Species Selected For Monitoring Question 3

Management Indicator Species	Reasons for Selection
Eastern Towhee	Trends in presence and abundance of this species in early-successional forests will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.
Chestnut-sided warbler	Changes in presence of this species in areas that provide high elevation early-successional habitats will be used to indicate effectiveness of management in achieving desired conditions within these sites.
Acadian flycatcher	Trends in presence and abundance of this species in mature riparian forests will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.
Ovenbird	Trends in presence and abundance of this species in mature deciduous forests will be used to help indicate the effectiveness of management in maintaining desired condition relative to forest interior habitats.

3. Are key successional stage habitats being provided?

Forest goals, objectives, and standards have been established for maintaining a balance between the early, mid-, and late-successional habitat conditions. Some wildlife species

depend on early successional forests, while others depend on late-successional forests. Trends in successional conditions and abundance of key successional habitats, such as high-elevation early successional habitat, mature forest interiors, old growth, and permanent wildlife openings, will be monitored. Population trends of Management Indicator Species selected to help indicate effects of management on successional habitats will be monitored.

4. How well are key terrestrial habitat attributes being provided?

Special habitat attributes such as hard and soft mast, den trees, snags, and downed wood are necessary elements for certain species. A variety of Forest Plan goals, objectives, and standards provide for the protection, restoration, and maintenance of these elements. Trends in the abundance and condition of key terrestrial habitat attributes and associated Management Indicator Species will be monitored.

Table 5-3. Management Indicator Species Selected For Monitoring Question 4

Management Indicator Species	Reasons for Selection
Pileated woodpecker	Trends in presence and abundance of this species across the forest will be used to help indicate the effectiveness of management in maintaining desired condition relative to abundance of snags.

5. What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?

The Forest Plan provides for protection and restoration of riparian ecosystems, wetlands, and aquatic systems and for assuring that aquatic habitat conditions are suitable to maintain native aquatic communities. Water quantity and quality, atmospheric deposition, in-stream large woody debris, and aquatic species passage will be monitored. Population trends for aquatic MIS in relation to the habitat conditions they are selected to represent will be monitored.

Table 5-4. Management Indicator Species Selected For Monitoring Question 5

Management Indicator Species	Reasons for Selection
Wild trout	Trends in presence and abundance of wild trout will be used to indicate the effects of acidification of stream systems, and the effectiveness of management in mitigating these effects.

6. What are status and trends of forest health threats on the forest?

Measures designed to control or mitigate negative effects of insects, disease, non-native invasive species, air pollution, and high fuel levels are important aspects of this Forest Plan. Trends in occurrence and effects of air pollutants, wildland fire, insects and diseases, and non-native invasive species will be monitored.

7. What are the status and trends of federally listed species and species with viability concerns on the forest?

Contribution to conservation and recovery of federally listed threatened and endangered species is an important goal of this Forest Plan. Trends in occurrence or abundance of

MONITORING AND EVALUATION

MONITORING QUESTIONS

these species will be monitored along with levels of management activities implemented for the purpose of achieving recovery. Some threatened and endangered species have been selected as Management Indicator Species because of their critical dependence on national forest management for recovery.

Maintaining habitat capable of supporting viable populations of native and desired non-native species is also an important goal of the Forest Plan. Many objectives and standards are designed to meet this goal. Monitoring will focus on trends for populations and/or habitats of species of viability concern. Where feasible, species monitoring will often be accomplished by monitoring communities of species (e.g., fish, bats, birds). Individual Management Indicator Species have been selected because their viability is critically dependent on national forest management.

Table 5-5. Management Indicator Species Selected For Monitoring Question 7

Management Indicator Species	Reasons for Selection
Peaks of Otter salamander	Trends in populations of this species will be used to indicate effectiveness of management activities designed specifically to meet conservation objectives for this species.

8. What are the trends for demand species and their use?

The Jefferson National Forest provides large public ownership with opportunities for hunting, fishing, wildlife viewing, and collection of special forest products. Monitoring of some game species populations and/or harvest levels will be done in coordination with the Virginia Department of Game and Inland Fisheries (VDGIF) and West Virginia Department of Natural Resources (WVDNR). Some of these species are selected as Management Indicator Species where effects of national forest management are important to meeting public demand, and monitoring assistance from VDGIF and WVDNR is available. Some species that are collected as special forest products will be monitored through management of the permitting process.

Table 5-6. Management Indicator Species Selected For Monitoring Question 8

Management Indicator Species	Reason for Selection
Black bear	Trends in harvest levels and hunting demand will be used to help indicate effectiveness of management in meeting public demand for this species.
Wild turkey	Trends in harvest levels and hunting demand will be used to help indicate effectiveness of management in meeting public demand for this species.
White-tailed deer	Trends in harvest levels and hunting demand will be used to help indicate effectiveness of management in meeting public demand for this species.
Wild trout (brook trout, rainbow trout, brown trout)	Trends in harvest levels and fishing demand will be used to help indicate effectiveness of management in meeting public demand for this species.

9. Are high quality, nature-based recreation experiences being provided and what are the trends?

The Jefferson National Forest offers a unique combination of nature based dispersed recreation, including undeveloped settings, built environments reinforcing natural character, and wildland settings that complement enjoyment of special places. This

Forest Plan aims to provide for safe, natural, well designed, accessible, and well-maintained recreational opportunities for all visitors. Monitoring visitor experiences and the condition of facilities will help gage the effectiveness in meeting this commitment.

10. What is the status and trend of wilderness character?

Wilderness character is comprised of both human and biophysical elements. Monitoring the human elements requires monitoring trends in the human experiences, i.e. solitude, crowding, etc., as well as trends in the use patterns and visitor impacts. User monitoring and surveys will allow for tracking trends among visitors to wilderness, while trailhead use and identification of sites with impacts will allow us to track movement and activities within wilderness and relationships to biophysical effects. Monitoring biophysical elements is important for tracking changes to the natural systems due to natural and human influences within and outside the wilderness. Although there are many components to the biophysical element, air quality is viewed as a basic indicator of wilderness health. Additionally, changes that are occurring in wilderness due to the fire regime, especially in fire dependent communities, will be monitored.

11. What are the status and trend of Wild and Scenic River conditions?

The two main elements in determining the eligibility and suitability of a river for inclusion in the National Wild and Scenic Rivers System are a free-flowing condition and the presence of Outstandingly Remarkable Values. Rivers determined to be eligible, or eligible and suitable, that have not yet been designated by Congress must have those elements protected until a further designation is assigned. Monitoring changes to these elements will help us evaluate our management of these rivers on our forests.

12. Are the scenic and aesthetic values being protected and enhanced?

Scenery is managed by establishing Scenic Integrity Objectives (SIO) consistent with a variety of landscape character themes. Management of scenery is essential in the management of recreational experiences and the quality of the environment. Changes in scenic quality and landscape character of the forest will be monitored.

13. Are heritage sites being protected?

Compliance with the National Historic Preservation Act is essential during implementation of this Forest Plan. The requirement that sites eligible for the National Register of Historic Places be identified and protected before ground disturbing activities occur must be met. Monitoring will be done to assess how well sites are being identified for protection and whether site protection measures are effective in preventing site loss.

14. Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?

This Forest Plan provides for management of watersheds to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial water uses. Numerous best management practices are established as standards for practices to be carrying out during implementation of the Forest Plan. Watershed condition, improvement needs, water quality, and implementation of best management practices will be monitored.

15. What are the conditions and trends of riparian area, wetland and floodplain functions and values?

Riparian ecosystems restoration and management is important to maintain aquatic

MONITORING AND EVALUATION

MONITORING QUESTIONS

resources and values. Desired conditions, including the composition and structure of vegetation, equipment limitations, maintaining ground cover and stable stream-banks are established in the Forest Plan. Floodplains and wetlands are to be protected. Riparian management practices and standards, ground cover, stream-bank stability, wetland and floodplain status will be monitored.

RESEARCH NEEDS

16. How do actual outputs and services compare with projected?

The 1982 NFMA implementing regulations require that outputs and services will be monitored and compared to those projected in the Forest Plan. Trends in forest product, mineral leasing and surface rights, access and road conditions, and Forest Plan implementation costs will be tracked and compared to projections made at the time the Forest Plan was developed.

17. Are silvicultural requirements of the Forest Plan being met?

The 1982 NFMA implementing regulations also require monitoring of specific silvicultural requirements. Silvicultural practices, harvest methods, harvest unit size, regeneration establishment, and land suitability for timber productions will be monitored and evaluated to determine if and when changes may be needed.

18. Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?

Periodic review of objectives and standards established in the Forest Plan is called for to assure that desired condition are being achieved and that these requirements will stay current given Forest Plan modifications, changed conditions and new information that accumulate over time. Implementation and effectiveness of best management practices and other standards will be tracked and periodically evaluated.

RESEARCH NEEDS

Research and monitoring are related activities that help to meet information needs for adaptive management of national forests. Research involves rigorous study under controlled conditions, following the scientific method. Research activities include study planning, design, quality control, peer review and relatively rigid publication standards. Monitoring is generally conducted under less controlled conditions and results are often more general in contrast with research.

Research needs for management of the National Forests are to be identified during planning and periodically reviewed during monitoring and evaluation of implemented Forest Plans (36 CFR 219.28).

The Forest Service Research Branch is the largest forestry research organization in the world and a national and international leader in forest conservation. Agency research contributes to the advancement of science and the conservation of many of our Nation's most valuable natural resources, both on private lands and the National Forests. Research needs identified during planning, monitoring and evaluation are to be included in formulating overall research programs and plans for Forest Service Research to support or improve management of the National Forests.

Research needs identified during development of this Forest Plan are listed in Appendix I. Research needs identified while monitoring the implementation of the Forest Plan will be reported in Annual Monitoring and Evaluation Reports.

AMENDMENTS

The Forest Plan can be amended at any time during its existence. Such amendments are necessary to ensure that the Plan remains a viable, flexible document for managing the Forest.

Errata sheets may be issued if necessary to correct spelling or grammatical errors, which may lead to confusion in the Forest Plan. Such changes are not considered amendments.

The Forest Plan may also be amended as part of a project-level decision where a change or adjustment in the Forest Plan is appropriate for that project but is not applicable to the entire Forest. Examples of such changes might be adjustments to, or waivers of, standards, or modifications of management area boundaries.

If it is determined during project design that the best method of meeting the management area goals of the Forest Plan is in conflict with either Forest or management area standards, the Forest Supervisor may approve a project-specific amendment to the Forest Plan.

REVISION

This Forest Plan will be revised on a 10-year cycle or at least every 15 years. It may also be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Forest Plan have changed significantly or when changes in policies, goals, or objectives would have a significant effect on the Forest-level programs. In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the Forest Plan at any time.

Future revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a Forest Plan. The Forest Supervisor will review the conditions on the land covered by the Forest Plan at least every 5 years to determine whether conditions or demands of the public have changed significantly.

Forest specialists work with researchers to develop solutions to forest health risks.

DEFINITION OF RIPARIAN CORRIDOR

APPENDIX A

RIPARIAN CORRIDORS VERSUS RIPARIAN AREAS

RIPARIAN CORRIDORS VERSUS RIPARIAN AREAS

DETERMINATION OF RIPARIAN CORRIDORS

Riparian Areas are functionally defined as areas with three-dimensional ecotones of interaction that include both terrestrial and aquatic ecosystems. They extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain into the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width (Ilhardt et al. 2000). A Riparian Corridor, on the other hand, is a management prescription area designed to include much of the Riparian Area. Within the riparian corridor management prescription area, management practices are specified to maintain riparian functions and values. As a management prescription area, this includes corridors along all defined perennial and intermittent stream channels that show signs of scour, and around natural ponds, lakeshores, wetlands, springs, and seeps.

DETERMINATION OF RIPARIAN CORRIDORS

Due to their spatial extent, riparian corridors are not identified on the Forest Plan map of prescription allocations. Estimated acreages of the Riparian Prescription allocations are based on the widths described in Tables in C-1 and C-2. For project planning and implementation, the following process will be used to determine the extent of site-specific riparian corridors.

Riparian corridor widths are designed to encompass the riparian area defined on the basis of soils, vegetation and hydrology and the ecological functions and values associated with the riparian area. The widths in Tables C-1 and C-2 shall be used to define the riparian corridor if the corridor is not site-specifically determined as described below.

If a site-specific field investigation determines the need to vary the widths in Table C-1 and C-2, that width shall become the project level riparian corridor. This corridor shall be determined by an interdisciplinary analysis using site-specific information to ensure that riparian values and functions are maintained.

The slope-dependent riparian corridor widths are measured in on-the-ground surface feet perpendicular from the edge of the channel or bank (stream, water body, etc.) and extend out from each side of a stream. For ponds, lakes, sloughs, and wetlands (including seeps or springs associated with wetlands) the measurement would start at the ordinary high water mark and go around the perimeter. For braided streams, the outermost braid will be used as the water's edge. An interrupted stream (a watercourse that goes underground and then reappears) will be treated as if the stream were above ground. (An acceptable level of error for on-the-ground measurements of these widths is $\pm$ 10%.) The riparian corridor includes human-created reservoirs, wildlife ponds, wetlands, and waterholes connected to or associated with natural water features. In addition, those areas not associated with natural water features, but support riparian flora or fauna, will have a riparian corridor designation. The riparian corridor management direction does not apply to constructed ponds developed for recreation uses; or to human-made ditches, gullies, or other features that are maintained or in the process of restoration. For these areas, site-specific analysis will determine appropriate protective measures. (See also the Forest-wide Standards in Chapter 2.)

DETERMINATION OF RIPARIAN CORRIDORS

Tables A-1 and A-2 do not apply to constructed ponds developed for recreation uses; or to human-made ditches, gullies, or other features that are maintained or in the process of restoration. For these areas, site-specific analysis will determine the appropriate protective measures.

OVERVIEW OF RIPARIAN CORRIDORS

Table A-1. Riparian Corridor Minimum Widths For Perennial Streams, Lakes, Ponds, Wetlands, Springs, or Seeps

Slope Class	10-15%	11-45%	45%+
Minimum width in feet (as described above)	100	125	150

See Glossary in Appendix B for definitions of wetlands, seeps, and springs included in riparian corridor.

Table A-2. Riparian Corridor Minimum Widths For Intermittent Streams

Slope Class	10-15% Core Area	11-45% Core + Extended Area	45%+ Core + Extended Area
Minimum width in feet (as described above)	50	75*	100*

* The Extended Area is the outer 25 feet (on 11-45 % slopes) and 50 feet (on 45% and greater slopes).

OVERVIEW OF RIPARIAN CORRIDORS

The figure below is a simplified representation of the Riparian Corridor that demonstrates its extension on both sides of a watercourse, down into the water table, and laterally around wetlands and other surface water sources. The Riparian Corridor may fall within or beyond the true Riparian Area.

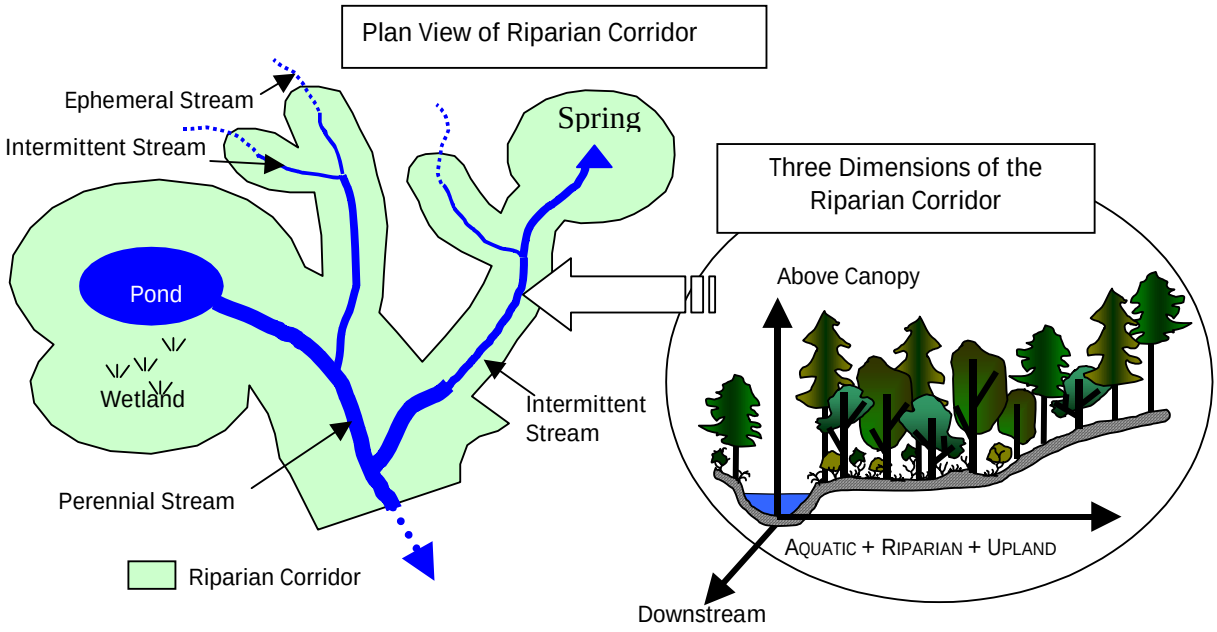


Figure A-1 Simplified Representation of a Riparian Corridor

OPERATIONAL DEFINITION FOR A RIPARIAN AREA

Riparian Areas are areas associated with the aquatic ecosystem and that portion of the terrestrial ecosystem that is substantially affected by the presence of surface and groundwater. Riparian areas consist of perennial streams, natural ponds, lakes, wetlands, and adjacent lands with soils, vegetation and landform indicative of high soil moisture or frequent flooding. Riparian areas have variable widths that are determined by ecologically significant boundaries rather than arbitrary distances. The extent of riparian areas is determined on-the-ground using features of soil, landform, and vegetation. No feature is used alone to delineate these ecosystems. Characteristics indicative of these areas are:

- Soils – dark colored Entisols, Inceptisols, and Mollisols;
- Landform – the 100-year floodplain;
- Vegetation – the presence of wetland plants classified as obligates or facultative wetland species as defined by the U.S. Fish and Wildlife Service in the National List of Plants that Occur in Wetlands: Northeast (Region 1). (Reed, P.B., Jr., 1988).

RELATIONSHIP WITH OTHER MANAGEMENT PRESCRIPTIONS

The Riparian Corridors overlap with other management prescription allocations. In order to establish precedence, the following rules apply:

Where the Riparian Corridor management prescription area overlaps with lands that have been allocated to the following Management Prescriptions, then whichever management direction is the most restrictive will apply.:

1A or 1B – Wilderness and Recommended Wilderness Study,
2C1 or 2C3 – Eligible Wild and Recreational Rivers,
4K2 or 4K6 – Special Areas,
6A – Old-Growth Forest Communities not Associated with Disturbance,
8E2a – Peaks of Otter Salamander Primary Habitat Conservation Area,
8E4a – Indiana Bat Primary Cave Protection Area,
9F – Rare Communities,
12A, or 12B, or 12C Backcountry Recreation Areas;

For lands allocated to any of the other management prescriptions, where the riparian corridor overlaps with these allocations, the direction in the Riparian Corridor Management Prescription will take precedence.

RELATIONSHIP WITH BEST MANAGEMENT PRACTICES

This Forest Plans meets or exceeds State Best Management Practices. Current State BMP handbooks or manuals are incorporated as direction in the Forest Plan and are implemented for those resource management activities that are covered by the handbooks/manuals. Standards for activities not included in BMP handbooks/manuals are included in Chapters 2 and 3 of this Forest Plan.

The Streamside Management Zones (SMZ) recommended in State BMPs are designated areas directly adjacent to streams and water bodies where land management activities

RELATIONSHIP WITH BEST MANAGEMENT PRACTICES

are controlled or regulated to primarily protect water quality and aquatic organisms from upslope land uses. Provisions within the SMZ typically contain sediment filter strips, a base shade level, restriction on ground disturbance and protection of stream banks and streambeds. As described, Riparian Corridors are management prescription areas that maintain ecological processes and functions. SMZs may be the same width or smaller than the riparian corridor, however, in some cases they may extend beyond the corridor.

RELATIONSHIP WITH CHANNELED EPHEMERAL STREAMS

RELATIONSHIP WITH CHANNELED EPHEMERAL STREAMS

Ephemeral streams do not have true riparian areas but are hydrologically connected to perennial and intermittent streams. Channeled Ephemeral Stream Zones include and are directly adjacent to all scoured ephemeral channels. Standards for the Channeled Ephemeral Zone are found in Chapter 2 of this Forest Plan. The primary purpose of this zone is to maintain the ability of the land to filter sediment from upslope disturbances while achieving the goals of the adjacent management prescription area. In addition, the emphasis along ephemeral streams is to maintain channel stability and sediment control by keeping vehicles away from stream banks and maintaining, restoring, or enhancing large woody debris. The management direction in this zone reflects the adjacent management prescription and may be modified as a result of watershed analysis.

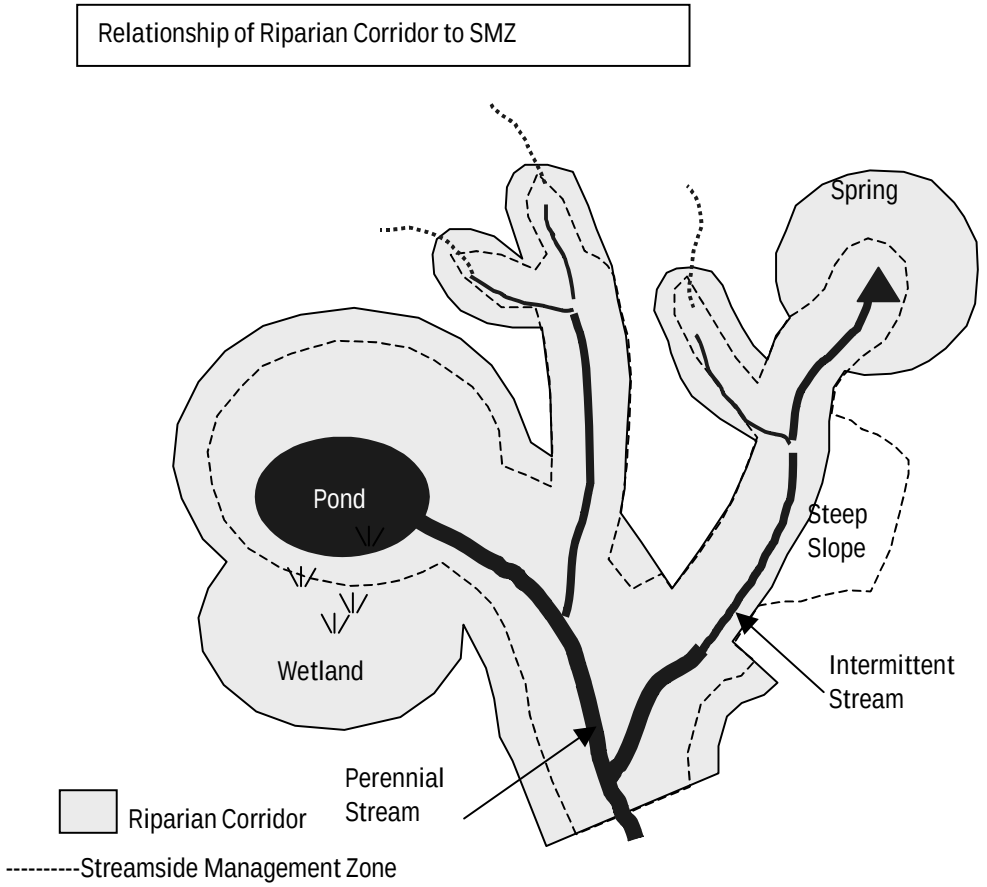


Figure A-2. Relationship of Riparian Corridor to Streamside Management Zone

OLD GROWTH STRATEGY

APPENDIX B

INTRODUCTION

INTRODUCTION

OLD GROWTH PATCHES OF DIFFERENT SIZES

The preliminary inventory of possible old growth for the Jefferson Forest Plan Revision is based upon the report of the Region 8 Old Growth Team entitled *Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region* (Old Growth Guidance). The Old Growth Guidance defines three types of old growth to be used by national forests in the Southern Region when describing old growth:

Existing Old Growth**.** Forest stands or patches that meet the age, disturbance, basal area, and tree size criteria described in the operational definitions for the 16 forest community types of the Southern Region. These criteria vary by forest community type and can be found in Table B-2. Information from scientific descriptions of the 16 old growth forest communities was used to develop the operational definitions and criteria. The Jefferson National Forest contains 9 of these 16 forest community types.

Future Old Growth**.** Forest stands or patches allocated to old growth through land management decisions, but which do not currently meet the operational definition for existing old growth. Examples of Future Old Growth include allocations of wilderness, backcountry, riparian corridor and special areas (such as the Crest Zone) management prescriptions. Management prescriptions 6A, 6B, and 6C contain some future old growth when useful for linking patches of existing old growth to create a medium-sized patch.

Possible Old Growth**.** Forest stands which meet one or more of the preliminary inventory criteria described on pages 8-11 of the Old Growth Guidance. Possible old growth was also used to link patches of Existing Old Growth to create medium patches allocated to Management Prescriptions 6A, 6B, and 6C. Possible Old Growth has served its purpose prior to the revision of the Forest Plan. The remainder of this old growth strategy will refer only to Existing and Future Old Growth.

OLD GROWTH PATCHES OF DIFFERENT SIZES

This Forest Plan contains a network of old growth areas composed of both Existing and Future Old Growth. This network consists of a mix of large, medium, and small patches. Large patches are designed to ensure the integrity of ecological functions and the distribution of old-growth conditions at the subregional scale. Large patches are greater than 2,500 acres and are always made up of Future Old Growth with medium and small patches of Existing Old Growth imbedded. This Forest Plan provides large patches of old growth in every Ecological Subsection. All forest community types except River Floodplain and Eastern Riverfront Hardwoods are represented in these large patches. Northern Hardwoods, Dry-Mesic Oak, Dry and Xeric Oak Forest, Montane Spruce and Spruce-Fir, and Dry and Dry-Mesic Oak-Pine forest communities are represented in one or more large patches.

Medium patches are designed to fill in gaps in old growth forest community type representation or to improve the spatial distribution between large-sized areas. Medium patches are greater than 100 acres and are typically a mix of existing and future old growth, although some existing old growth is in medium patches. All forest community types except River Floodplain and Eastern Riverfront Hardwoods are represented in one or more medium patches.

OLD GROWTH PATCHES OF DIFFERENT SIZES

Small patches typically protect existing old growth or represent forest communities that are underrepresented, and/or normally occur in small, isolated patches. Small patches are 100 acres or smaller. All forest community types are represented in several to many small patches, with the River Floodplain and Eastern Riverfront representing the least.

OLD GROWTH ALLOCATION IN THIS FOREST PLAN

OLD GROWTH ALLOCATION IN THIS FOREST PLAN

The network of old growth patches across the Jefferson National Forest is distributed across all Ecological Subsections and linked by a forest matrix dominated by mid– and late-successional forest conditions.

Table B-1. Old Growth Allocations in this Forest Plan

Forest Community	Total Acres in All Age Classes	Acres Existing Old Growth	Acres Future Old Growth
Northern Hardwood	16,800	2,000	11,300
Conifer-Northern Hardwood	21,400	900	6,000
Mixed Mesophytic	84,500	4,700	33,300
River Floodplain and Eastern River-front	309	13	296
Dry-Mesic Oak	269,300	21,800	98,800
Dry and Xeric Oak Forest, Woodland and Savanna	120,100	10,300	52,700
Xeric Pine and Pine-Oak Forest and Woodland	41,500	1,300	16,700
Dry and Dry-Mesic Oak-Pine	146,600	8,800	66,500
Montane and Allied Spruce and Spruce-Fir	4,200	120	4,000

IDENTIFICATION OF ADDITIONAL OLD GROWTH PATCHES

IDENTIFICATION OF ADDITIONAL OLD GROWTH PATCHES

The identification of additional old growth patches during project-level decision-making and monitoring is limited to patches which meet the operational criteria for existing old growth, which because of their condition or forest community represented would contribute to the desired condition of the management prescription in which they are found or the Forest-wide distribution and abundance of that particular old growth community type.

The determination of a stand's status as existing old growth is based on age, past disturbance, basal area, and tree size. Table B-2 provides the attributes for determining old growth status of forest stands. If during field inventory, a stand meets all four criteria it will be considered existing old growth.

The minimum age criteria is applicable when at least 30 trees per acre are present for the deciduous forest community types and at least 10 trees per acre for the pine forest community types. The minimum d.b.h. criteria is applicable when at least 10 trees per acre are present for all forest community types.

Table B-2. Operational Criteria for Determining Existing Old Growth

Old Growth Forest Community Type	Minimum Age of the Oldest Age Class	Minimum Basal Area (square feet/acre)	Largest Trees d.b.h.
Northern Hardwood	100	40	≥ 14
Conifer Northern Hardwood	140	40	≥ 20
Mixed Mesophytic	140	40	≥ 30
River Floodplain-Eastern Riverfront	100	40	≥ 16
Dry-Mesic Oak	130	40	≥ 20
Dry and Xeric Oak Forest, Woodland and Savannah	110	10	≥ 16
Dry and Dry-Mesic Oak-Pine	120	40	≥ 19
Xeric Pine and Pine-Oak Forest and Woodland	100	20	≥ 20

For a stand to be considered existing old growth, no obvious evidence of past human disturbance which conflicts with the old growth characteristics of the area should be present.

The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions and disturbance regime. Old growth in fire-dependent forest types may not differ greatly from young forests in the number of canopy layers or accumulation of downed woody material. However, old growth is typically distinguished from younger growth by several of the following attributes:

- Large trees for the species and site.
- Wide variation in tree size and spacing.
- Accumulations of large-sized, dead, standing and fallen trees that are high, relative to earlier stages.
- Decadence in the form of broken or deformed tops or boles and root decay.
- Multiple canopy layers.
- Canopy gaps and understory patchiness.

Additional information regarding the old growth forest community types can be found in the Old Growth Guidance.

EVALUATION OF ADDITIONAL OLD GROWTH PATCHES

EVALUATION OF ADDITIONAL OLD GROWTH PATCHES

The network of old growth patches across the Jefferson National Forest is distributed across all Ecological Subsections and linked by a forest matrix dominated by mid- and late-successional forest conditions. Existing and Future Old Growth allocations have been made for all forest community types.

The River Floodplain and Eastern Riverfront forest communities are not well-represented on the Jefferson National Forest in any age class. These community types are typically found along the banks of large streams and rivers which tend to be in private ownership. These forest communities are restricted to riparian zones where flooding routinely occurs, therefore, the locations of these forests shift as stream and river course change and meander. Newly discovered communities of any age class may be allocated to Management Prescription 9G1 which emphasizes these natural processes unless forest management activities are deemed to be necessary to restore these communities due to a disruption in their natural disturbance regime. Newly discovered old growth communities should be allocated to Management Prescription 6C - Old Growth Communities Associated with Disturbance.

The Conifer-Northern Hardwood forest community contains eastern and Carolina hemlocks both of which are being severely affected by hemlock wooly adelgid. This forest community is currently widespread across the riparian areas of the Jefferson National Forest, but will become increasingly rare as the hemlock wooly adelgid spreads southward. Newly discovered patches which meet the operational criteria for existing old growth containing hemlock should be evaluated for their ability to persist on the landscape and allocated to 6A - Old Growth Communities Not Associated with Disturbance if they have been determined not vulnerable to hemlock wooly adlegid. Newly discovered existing old growth communities composed of white pine and northern hardwoods should be evaluated for their contribution to the desired condition of the management prescription in which they lie.

The Northern Hardwood and Montane and Allied Spruce and Spruce-Fir forest communities are confined to the higher elevations of the Jefferson National Forest. They are largely protected in old growth, wilderness, backcountry, and special area management prescriptions. Due to the rareness of these communities on the Forest and their importance to a number of threatened, endangered, sensitive, or locally rare species, any newly discovered patches which meet the operational criteria for existing old growth should be allocated to 6A if they are not already in a management prescription which protects their old growth characteristics. A small pocket of red spruce on the Mount Rogers NRA has recently been infested with the southern pine beetle. Management actions to prevent the spread of this pest into other spruce-fir communities may neccessitate cutting existing old growth (dead or alive) in order to ultimately protect the whole community from the ravages of this native pest.

The Mixed Mesophytic forest community is abundant and well-distributed throughout the Jefferson National Forest, particularly in riparian areas and coves. This community is important for many biological, social, and economic reasons. Older trees in this community type are tall and very large in diameter, providing an aesthetic landscape that most people picture when they think of old growth. Forty-four percent of the Mixed Mesophytic forest community is well-distributed and protected within Management Prescriptions 6A - Old Growth Communities Not Associated with Disturbance, 11 — Riparian Corridors, and wilderness and backcountry allocations, however newly discovered patches which meet the operational criteria for existing old growth communities may be allocated to 6A due to their high social value and/or their contribution to the desired condition of the management prescription in which they lie.

EVALUATION OF ADDITIONAL OLD GROWTH PATCHES

The Xeric Pine and Pine-Oak Forest and Woodland community has the lowest percentage represented in the current inventory of existing old growth of the widespread community types across the Forest (the Montane Spruce and Spruce-fir and River Floodplain and Eastern Riverfront forest communities are equally low, but are much rarer across the landscape). These forest communities have historically experienced frequent fires and are relatively short-lived. Newly discovered patches which meet the operational criteria for existing old growth communities within this type may be allocated to 6B - Old Growth Forest Communities Dependent on Fire based on their contribution to the distribution and abundance of the current 6B land allocation and/or their contribution to the desired condition of the management prescription in which they lie.

The Dry-Mesic Oak forest community is well-represented in both existing and future old growth, however there are specific forest types within this broader community classification which are not well-represented. When evaluating newly discovered patches which meet the operational criteria for existing old growth in this community type, specific forest types should be considered separately for their contribution to the matrix of large, medium, and small old growth patches.

Exemplary illustrations of other existing old growth forest community types may also be allocated to one of the old growth management prescriptions when appropriate, however protection of these other types is not necessary for the matrix of large, medium, and small old growth patches.

The Jefferson National Forest features solitude, backcountry, and remote habitat.

DESCRIPTION OF RARE COMMUNITIES

APPENDIX C

INTRODUCTION

Rare Communities and other special biological areas on the Jefferson National Forest were identified through a cooperative effort between the Forest and the Virginia Department of Conservation and Recreation, Division of Natural Heritage (VA-DCR-NH). VA-DCR-NH submitted two main reports summarizing areas needing special management for this Forest Plan Revision process, one in April, 1996 and another in July, 2000. In addition, several interim reports were also provided. These reports contain a listing of heritage resources found in each area, a site description, identified threats to the area, management recommendations, protection recommendations, and VA-DCR-NH's rationale for the boundary of the areas depicted on accompanying maps. All areas have a protective buffer included within the boundary, so acres shown include this buffer.

These maps were digitized by Jefferson National Forest personnel and used for allocation of Management Prescription 9F – Rare Communities, as well as Management Prescription 4D – Special Biological Areas. Special Biological Areas contain one or more rare species, but not a rare community.

Table C-1 displays the areas identified by their broad community classification. Several areas contain more than one rare community. These areas are identified by the title "Rare Community Assemblage." The acres shown are for the entire area, not individual rare communities, and as already mentioned, also include acres of protective buffer.

It is important to note that only prime examples of rare communities that support significant populations or associations of viability concern species are allocated to the Rare Community Management Prescription, 9F. For example, every rock outcrop, abandoned mine, or rich cove forest is not covered under the standards of 9F.

GLADES, BARRENS, AND ASSOCIATED WOODLANDS

These communities are characterized by thin soils and exposed parent material that result in localized complexes of bare soils and rock, herbaceous and/or shrubby vegetation, and thin, often stunted woods. During wet periods they may include scattered shallow pools or areas of seepage. Glades, barrens, and associated woodlands differ from rock outcrop communities by exhibiting soils and vegetative cover over the majority of the site, and differ from the more widespread woodland communities in that they occur on geologic substrates which are unique for the region, including limestone, dolomite, amphibolite, greenstone, mafic rock, serpentine, sandstone, or shale. Associated communities include Calcareous Woodlands and Glades, Mafic Woodlands and Glades, Serpentine Woodlands and Glades, and Shale Barrens as defined in the Southern Appalachian Assessment (SAMAB 1996). At minimum, this rare community complex includes rare associations within the following ecological groups as defined by NatureServe (2001a):

401-17	Appalachian Highlands Calcareous/Circumneutral Dry-Mesic Hardwood Forest
440-05	Appalachian Highlands Carbonate Glades and Barrens
440-10	Interior Highlands Carbonate Glades and Barrens
440-25	Appalachian Sandstone Glades and Barrens
440-80	Appalachian Mafic Igneous/Metamorphic Glades and Barrens

The following descriptions of glades, barrens and associated woodlands on the Jefferson National Forest comes from Fleming and Coulling (2001) and uses their classification.

Table C-1. Rare Communities on the Jefferson NF.

Glades, Barrens, and Woodlands Area Name	JNF Acres
Bald Mountain Sandstone Glades	140
Bessemer Barren	10
Broad Run Barren	18
Bryant Gap	486
County Line Barrens	49
Cove Mountain	141
Forest Road 462 Barrens	74
Furnace Mountain	56
Given Barren	25
Hanging Rock Hollow	42
Horton Barren	57
Jennings Creek Shale Barren	43
Lick Branch Barrens	49
Little Patterson Creek Barren	42
Little Stone Mountain	1,167
Maggie Shale Barren	31
Mudlick Branch Woodland	10
North Creek Woodland	39
Patterson Creek Barren	81
Patterson Mountain Barren	33
Raven Cliff	775
Roadcut Barren	5
Sarver Barrens	154
Sevenmile Mountain	187
Sinking Creek Mountain	207
Sprouts Run	142
Skegg Woodlands	206
Staunton Creek Gorge	353
Surber Barren	31
Trout Creek Shale Barren	13
Upper Skegg Spur	25
Whitetop Laurel Slopes	63
Basic Mesic Forest Area Name	
Dismal Creek	619
Little Stone Mountain	1,167
Lovelady Coves	35
Staunton Creek Gorge	353
Beech Gap Forest Area Name	
Mount Rogers	3,936
High Elevation Balds Area Name	
Whitetop Mountain	1,090

Mountain Wetlands Area Name	JNF Acres
Big Wilson Creek	578
Chimney Cliffs and Russell Fork	368
Day Creek Pond	13
Dismal Creek	619
Glady Fork Beaver Meadow	821
Hagen Hall Sinkhole Pond	19
Indian Grave Gap	373
Interior Seep	94
James Riverside Prairie	83
Kelly Knob-Big Pond	592
Little Wilson Creek Headwaters	464
N. Fork Stony Creek	259
Potts Cove	349
Potts Pond	26
Pound River	101
Salt Pond Mountain	1,310
Tazewell Beartown	788
Rock Outcrops and Cliffs Area Name	
Camp Rock	7
Chimney Cliffs and Russell Fork	368
Cliff Mountain	2,673
James River Gorge	8,922
Mount Rogers	3,936
Raven Cliff	775
Caves and Mines Area Name	
Cave Springs Cave	166
Cliff Mountain	1,603
Little Stone Mountain	1,167
Pine Mountain Tunnel	206
Shires Saltpetre Cave	381
Staunton Creek Gorge	353
Stone Mtn/Powell Mtn Cliffs	318
Spruce-Fir Forest Area Name	
Mount Rogers	3,936
Tazewell Beartown	788
Whitetop Mountain	1,090
Carolina Hemlock Forest Area Name	
Raven Cliff	775
TOTAL Number of Areas	59
TOTAL JNF Acres[1]	28,275

[1] Not all of these acres are actual rare communities, they include buffer areas as well. Approximately 15,000 acres are within existing Wilderness areas.

CENTRAL APPALACHIAN SHALE BARRENS

A variable group of sparse woodlands, shrublands, and open herbaceous rock outcrops occurring on Ridge and Valley shales and Blue Ridge metashales of the Central Appalachian Mountains. These small-patch communities range from western Virginia and eastern West Virginia to southern Pennsylvania. In Virginia, they occur at elevations from 250 to 930 m (850 to 3040 ft). Although stunted trees of several species — *e.g.*, *Quercus prinus*, *Pinus virginiana*, and *Carya glabra* — are common, shale barrens are strongly characterized by their open physiognomy and by a suite of uncommon to rare plants found almost exclusively in these habitats. Endemic or near-endemic shale barren species include *Arabis serotina*, *Clematis albicoma*, *Clematis viticaulis* (also endemic to Virginia), *Eriogonum allenii*, *Oenothera argillicola*, *Packera antennariifolia* (= *Senecio antennariifolius*) and *Trifolium virginicum*. Habitats generally occur on steep (~ 30 degree) slopes with south to west aspects. The steep, xeric slopes and friable nature of the shale create poorly vegetated hillsides of bare bedrock and loose channery visible from afar. Continual undercutting of thick but relatively weak shale strata by streams maintain shale barrens. Less common, densely graminoid-dominated variants occurring on steep spur ridge crests and mountain summits are sometimes referred to as “shale ridge balds.” Shale barrens are considered globally uncommon and host many locally rare species including the butterflies Appalachian grizzled skipper (*Pyrgus wyandot*) and Olympia marble (*Euchloe olympia*) and the federally listed plant *Arabis serotina*. The primary threat to these communities is probably invasion by exotic species, but examples of these communities near roads are also threatened by quarrying.

Examples:

- Central Appalachian shale barren – Maggie shale barren, NRV
- Central Appalachian shale barren – Furnace Mt., Glenwood
- Central Appalachian shale barren – Sprouts Run, Glenwood
- Central Appalachian shale barren – North Creek woodland, Glenwood
- Central Appalachian shale barren – Hanging Rock Hollow, Glenwood
- Central Appalachian shale barren (2)– James River Gorge, Glenwood
- Central Appalachian shale barren – Little Patterson Creek shale barren, New Castle
- Central Appalachian shale barren – County Line shale barrens, New Castle
- Central Appalachian shale barren – Broad Run barren, New Castle
- Central Appalachian shale barren – Craig Creek Barren SIA, New Castle
- Central Appalachian shale barren – Sarver barrens, New Castle
- Central Appalachian shale barren – Surber barren, New Castle

MONTANE ACIDIC WOODLANDS

Coniferous, mixed, or less commonly deciduous woodlands of xeric, edaphically stressful habitats. Communities in this group are scattered throughout the Virginia mountains and occupy somewhat heterogeneous habitats that are characterized by shallow, drought-prone, highly oligotrophic soils. These include barren, acidic shale slopes and crests in the Ridge and Valley and Northern Blue Ridge provinces; sandstone outcrops and pavements in the Ridge and Valley and Cumberland Mountains; and xeric, low-elevation terrain formed on massive alluvial fans along the western foot of the Blue Ridge. Pines, including *Pinus virginiana*, *Pinus rigida*, and *Pinus echinata* are characteristic canopy trees in several environmental / compositional variants. *Quercus prinus*, *Quercus stellata*,

GLADES, BARRENS AND ASSOCIATED WOODLANDS

Quercus marilandica, and *Quercus ilicifolia* are widespread oak components. In some cases, Montane Acidic Woodlands are floristically similar to Pine-Oak/Heath Woodlands but are maintained primarily by drought stresses associated with outcrop environments rather than by fire. They also tend to have a sparser representation of heath shrubs and a more diverse herb layer, with a larger component of graminoids such as little bluestem (*Schizachyrium scoparium*) or Pennsylvania sedge (*Carex pensylvanica*). At least some of the community types in this group appear to be state- or globally rare, but their relationship to vegetation on a regional scale needs further investigation.

Examples:

- Low elevation acidic outcrop barren – Bald Mt., New Castle
- Low elevation acidic outcrop barren – Cove Mt., NRV
- Low elevation acidic outcrop barren – Osborne Ridge, Clinch
- Low elevation acidic outcrop barren – Skegg woodlands, Clinch
- Low elevation acidic outcrop barren (3) – Bryant Gap, Clinch
- Oak-hickory woodland/savanna (Typic subtype)- Skegg woodlands, Clinch

MONTANE DRY CALCAREOUS FORESTS AND WOODLANDS

Deciduous or occasionally mixed forests and woodlands of mostly subxeric, fertile habitats over carbonate formations of limestone or dolomite. Habitats are steep, usually rocky, south- to west-facing slopes at elevations from < 300 to 900 m (< 1000 to 2900 ft). Soils vary from circumneutral to moderately alkaline, and have high calcium levels. Confined in Virginia to the mountains, these communities are most frequent and extensive in the Ridge and Valley, but occur locally in both the Blue Ridge and Cumberland Mountains. Tree canopies vary from nearly closed to sparse and woodland-like. Overstory mixtures of *Quercus muehlenbergii*, *Acer saccharum*, *Acer nigrum*, *Quercus rubra*, *Quercus alba*, *Quercus shumardii*, *Fraxinus americana* are typical. These forests and woodlands share many understory and herbaceous plants with the Piedmont / Mountain Basic Woodlands group and are similarly species-rich. A few of the taxa that are confined to or most important in the limestone and dolomite communities include *Frangula caroliniana*, *Packera obovata* (= *Senecio obovatus*), *Erigeron pulchellus*, *Diarrhena americana*, *Muhlenbergia tenuiflora*, *Piptatherum racemosum (= Oryzopsis racemosa)*, *Carex purpurifera* (in extreme southwestern Virginia only), *Helianthus hirsutus*, *Helianthus microcephalus*, and *Zigadenus elegans* ssp. *glaucus*. Much compositional variation is evident in these communities across western Virginia.

Examples:

- Dry calcareous forest/woodland (Montane subtype) (2) – Stone Mt./Powell Mt. Cliffs, Clinch
- Dry calcareous forest/woodland (Montane subtype) – Cliff Mt., Clinch
- Dry calcareous forest/woodland (Montane subtype) (2) – Little Stone Mt., Clinch
- Dry calcareous forest – Staunton Creek Gorge, Clinch
- Dry calcareous forest – Little Stone Mt., Clinch
- Dry calcareous forest – Raven Cliff, NRA

LOW ELEVATION BASIC OUTCROP BARRENS

Scrub and herbaceous vegetation of exposed, base-rich outcrops in the Piedmont and mountain regions. The majority of documented occurrences are on mafic (diabase,

amphibolite, gabbro) outcrops of the Piedmont and Southern Blue Ridge, and metabasalt (greenstone) outcrops of the northern Piedmont and Blue Ridge. A few examples on granitic rocks and calcareous sandstone have also been documented. Habitats generally have high cover of exposed bedrock, but often have more extensive organic or soil mats, and thus more vascular plant cover, than do acidic outcrops. Soils usually consist of thin veneers and vary from strongly acidic to circumneutral, with moderately high base status. Vegetation is usually a patchwork of stunted trees, shrub thickets, herbaceous mats, and lithophytic lichens. Typical woody species include *Fraxinus americana*, *Juniperus virginiana*, *Chionanthus virginicus*, *Physocarpus opulifolius*, *Rhus aromatica*, and *Ptelea trifoliata*. Typical herbs include *Allium cernuum*, *Talinum teretifolium*, *Polygonum tenue*, *Helianthus divaricatus*, *Cheilanthes lanosa*, *Woodsia ilvensis*, *Schizachyrium scoparium*, *Muhlenbergia capillaris*, *Asclepias verticillata*, *Phacelia dubia*, and *Heuchera americana*. These small-patch communities are rare in Virginia and globally. Perhaps because of their more fertile substrates, basic outcrop barrens are more prone to invasion by exotic weeds than are acidic barrens.

Examples:

- Low elevation basic outcrop barren – Millers Yard, Private land near Clinch RD.

MONTANE BASIC WOODLANDS

Deciduous and mixed woodlands of xeric, rocky habitats over mafic substrates such as diabase, gabbro, metabasalt (greenstone), and amphibolite. A few examples of this group occur in habitats underlain by base-rich granite, calcareous shale, and calcareous sandstone. Occurrences in Virginia are widely and locally scattered throughout the Piedmont and mountains, often occurring in patch-mosaics with exposed outcrop barrens. They are most frequent (but still very local) in greenstone districts of the Northern Blue Ridge. Habitats are situated on south- to west-facing slopes with numerous outcrops and shallow, rocky soils that are dry but relatively fertile, with moderately high levels of calcium and magnesium. Although *Quercus* spp. are frequent (sometimes dominant) components, these woodlands are more often dominated by variable mixtures of *Fraxinus americana* and *Carya* spp., often with *Juniperus virginiana* or *Pinus virginiana* as a major associate. Trees are usually somewhat stunted and form an open or sparse canopy. Typical small trees and shrubs include *Cercis canadensis*, *Ostrya virginiana*, *Physocarpus opulifolius*, *Rhus aromatica*, *Celtis occidentalis*, *Celtis tenuifolia*, *Ulmus rubra*, and *Ptelea trifoliata*. These woodlands contain a surprisingly diverse array of herbaceous graminoids and forbs; a few of the more widespread, representative species are *Muhlenbergia sobolifera*, *Solidago ulmifolia*, *Elymus hystrix*, *Carex pensylvanica*, and *Pycnanthemum incanum*. There are few threats to these communities, although the shrub *Symphoricarpos orbiculatus*, introduced from farther west, is a troublesome invasive in some stands.

Examples:

- Montane basic woodland (2) – Bryant Gap, Clinch
- Montane basic woodland – Whitetop Laurel slopes, NRA

PINE-OAK /HEATH WOODLANDS

Species-poor, fire-influenced, mixed woodlands of xeric, exposed mountain habitats. Sites are typically located on convex, south to west facets of steep spur ridges, narrow rocky crests, and cliff tops. Pine–oak/heath woodlands are widespread throughout both the Ridge and Valley and Blue Ridge provinces in western Virginia. They occur at elevations from below 300 m (1000 ft) to more than 1200 m (4000 ft) on various substrates, but most commonly on acidic, sedimentary and metasedimentary substrates, *e.g.*, sandstone,

GLADES, BARRENS AND ASSOCIATED WOODLANDS

RARE MOUNTAIN WETLAND COMMUNITIES

quartzite, and shale. A few stands occur on Piedmont monadnocks and foothills. Soils are very infertile, shallow, and droughty. Thick, poorly decomposed duff layers, along with dead wood and inflammable shrubs, contribute to a strongly fire-prone habitat (Groeschl *et al* 1992). Short-statured *Pinus pungens* and *Pinus rigida* are usually dominants forming an open canopy, often with co-dominant *Quercus prinus*. Less important tree associates include *Quercus coccinea*, *Pinus virginiana*, and *Sassafras albidum*. Except in the Piedmont stands, *Quercus ilicifolia* is characteristic (often abundant) in the shrub layer, along with various ericaceous shrubs. Colonial shrubs usually pre-empt available microhabitats for most herbaceous species, but *Pteridium aquilinum* var. *latiusculum* and the spectacular *Xerophyllum asphodeloides* are often competitive enough to achieve significant cover. Periodic fire is an important ecological process that provides opportunities for regeneration of both pines and less competitive herbaceous species, while setting back successional encroachment of potential canopy oaks (especially *Quercus prinus*). On cliffs and other very rocky sites, the vegetation is self-perpetuating due to extreme edaphic conditions. Fire reduction and the insect pest, southern pine beetle (*Dendroctonus frontalis*) are the most serious threats to communities of this group. The state-rare northern pine snake (*Pituophis melanoleucus melanoleucus*) and several rare moths, all bear oak feeders, are locally associated with these woodlands.

Examples:

- Pine-oak/heath woodland – Indian Grave Gap, Clinch
- Pine-oak/heath woodland – Lignite overlook, New Castle

These communities may be found in the Appalachian and Piedmont regions. Limestone or dolomite, and sandstone glades and barrens occur primarily in the Ridge and Valley physiographic provinces ranging from Northern Alabama to Kentucky. Good examples are few and very restricted in distribution. Serpentine glades are known primarily from the Nantahala National Forest in North Carolina. Shale and mafic woodlands are more widespread in distribution, and may be forested if fire has not played a role in their maintenance or restoration. Most occurrences for mafic associations are from the piedmont, but may occur as high as 3800 feet in elevation. Most shale woodlands are in the Carolina Slate Belt in Georgia, North Carolina, and South Carolina, but neither shale nor mafic woodlands have been well inventoried.

The SAA (1996) concluded that only 25% of the known occurrences for species associated with mafic and other calcareous habitats, occurred on National Forest lands.

Currently, inventory information for these communities is incomplete. Though underlying soils may differ from the surrounding soils in exchangeable nutrient capacity or pH, they may be overlooked in mapping efforts since they often occur as small inclusions within larger stands. To achieve desired composition and structure within these communities, many will require active restoration, such as basal area reduction, woody understory and mid-story control, or prescribed fire. Prescribed fire will often be needed to maintain these communities once restored.

RARE MOUNTAIN WETLAND COMMUNITIES

It is estimated that more than 50% of the nation's wetlands have been destroyed in the past 200 years (Ernst and Brown 1988). They are vulnerable to destruction on private land and, therefore, it is critical to maintain these communities where they occur on national forest land. Wetlands have been ditched and drained for pastures, mined for peat (Ewel 1990), and filled for shopping centers. Loss of some wetlands can also be attributed to sedimentation, pollution, and plant succession due to fire suppression (USFWS 1991). Beaver activity has historically played an important role in creating open wetland habitats that are now rare on the landscape. Beaver wetlands are beneficial for

many rare species such as monkey face orchid (Shea 1992), but may be detrimental to others such as bog turtle (Jensen, pers. comm.). Beaver impoundments also may cause unacceptable impacts to facilities and other resources.

Rare mountain wetland communities in the Southern Appalachians and Piedmont include bogs, fens, seeps, ponds, river gravel-cobble bars, and river scour areas as defined in this section.

APPALACHIAN HIGHLANDS BOGS, FENS, SEEPS, AND PONDS

Bogs, fens, seeps, and ponds may be found in both the Appalchian and Piedmont regions, and are characterized by 1) soils that are semi-permanently to permanently saturated as a result of groundwater seepage, perched water tables, rainfall, or beaver activity, but otherwise are generally nonalluvial, and 2) presence of wetland-associated species such as sphagnum, ferns, and sedges. Dominant vegetation may be herbs, shrubs, trees, or some complex of the three. Ponds in this group include limesink, karst, and depression ponds, which may hold areas of shallow open water for signficant portions of the year. Also included are all impoundments and associated wetlands resulting from beaver activity. Artificial impoundments are not included, unless they support significant populations or associations of species at risk. The primary management need is that of protection from activities that could disrupt wetland hydrology or other community structures and functions. Some sites may require periodic vegetation management to maintain desired herbaceous and/or shrubby composition. Rare mountain wetland communities include Mafic and Calcareous Fens, Sphagnum and Shrub Bogs, Swamp Forest-Bog Complex, Mountain Ponds, Seasonally Dry Sinkhole Ponds, and Beaver Pond and Wetland Complex as defined in the Southern Appalachian Assessment (SAMAB 1996), and all Associations within the following Ecological Groups as defined by NatureServe (2001):

- 458-15 Appalachian Highlands Wooded Depression Ponds
- 458-20 Appalachian and Interior Highlands Limesink and Karst Wooded Ponds
- 470-10 Appalachian Highlands Forested Bogs
- 470-20 Appalachian Highlands Forested Acid Seeps
- 470-50 Appalachian Highlands Forested Fens and Calcareous Seeps
- 475-10 Appalachian Highlands Acid Herbaceous Seeps
- 475-20 Appalachian Highlands Alkaline Herbaceous Fens and Seeps
- 475-30 Appalachian and Interior Highlands Herbaceous Depression Ponds and Pond-shores

APPALACHIAN HIGHLANDS RIVERINE VEGETATION

Riverine rare communities are characterized by 1) sites adjacent to or within stream channels that are exposed to periodic flooding and scour, and 2) presence of significant populations or associations of species at risk. These communities may be found in both Appalachian and Piedmont regions. Primary management needs are protection from disturbance during development of road crossings, and maintenance of desirable in-stream flows. These communities include River Gravel-Cobble Bars as defined in the Southern Appalachian Assessment (SAMAB 1996), and the rare Associations within the following Ecological Groups as defined by NatureServe (2001):

- 457-10 Appalachian Highlands Riverine Vegetation
- 457-30 Rocky Riverbeds
- 457-40 Appalachian Highlands Riverscour Vegetation

RARE MOUNTAIN WETLAND COMMUNITIES

The SAA Terrestrial Report summarizes the approximate number of occurrences of some of these wetland communities on National Forest lands in the Southern Appalachians (SAMAB 1996: 190). On the Jefferson National Forest there are 20 known occurrences of wetland rare communities documented in the Virginia Department of Conservation and Recreation database (Virginia Department of Conservation and Recreation 1999).

The Virginia Division of Natural Heritage has identified the following rare mountain wetland community types (using their community classifications) on the Jefferson National Forest (Fleming and Coulling 2001).

HIGH ELEVATION SEEPAGE SWAMPS

Saturated, coniferous or mixed forests of gently sloping stream headwaters, large spring seeps, and ravine bottoms at elevations above 900 m (3000 ft). These communities are locally scattered in the higher mountains of western Virginia on various geologic substrates and soils, almost all of which are strongly to extremely acidic. Habitats feature pronounced hummock and hollow microtopography, with braided streams, muck-filled depressions, and lush bryophyte cover. *Tsuga canadensis*, *Betula alleghaniensis*, and *Acer rubrum* are the most common trees. Locally, *Picea rubens* or *Pinus strobus* may be co-dominants. Shrub layer composition and density is variable; deciduous hollies (*Ilex verticillata* and *Ilex montana*), several blueberries (particularly *Vaccinium corymbosum*, *Vaccinium simulatum*, and *Vaccinium angustifolium*), *Rhododendron maximum*, *Kalmia latifolia*, *Alnus incana* ssp. *rugosa*, and *Hamamelis virginiana* may be abundant. Characteristic herbs of these swamps include *Caltha palustris*, *Carex echinata*, *Carex leptonervia*, *Carex scabrata*, *Carex trisperma*, *Cinna latifolia*, *Doellingeria umbellata* (= *Aster umbellatus*), *Glyceria melicaria*, *Oclemena acuminata* (= *Aster acuminatus*), *Osmunda cinnamomea*, *Veratrum viride*, and *Viola macloskeyi* ssp. *pallens*. Communities in this group are naturally rare due to the scarcity of flat or gentle, wet habitats in the higher Appalachians. Beavers have partially destroyed fine examples of these swamps at several sites.

Examples:

- Southern Appalachian swamp forest-bog complex (Typic type) – Potts Mt./ Maple Flats Branch Headwaters, (Potts Cove Rare Community Assemblage) NRV
- Southern Appalachian swamp forest-bog complex (Typic type) – Salt Pond Mt., NRV
- Southern Appalachian swamp forest-bog complex (Typic type) – Lower Big Wilson Creek, NRA
- High-elevation hemlock-yellow birch seepage swamp – Camping Ridge, Glenwood
- High-elevation hemlock-yellow birch seepage swamp – Thunder Hill, Glenwood

MOUNTAIN PONDS

Seasonally to semipermanently flooded shrub and herbaceous vegetation of basin wetlands situated on broad ridge crests, landslide benches and, more rarely, mountain-foot alluvial fans of the Ridge and Valley and Blue Ridge provinces. These very rare natural ponds range up to about 0.4 hectare (one acre) in size and are thought to have formed from the sagging or solution of underlying bedrock strata. Hydrologic regime is variable from pond to pond, and many sites exhibit pronounced seasonal water-level fluctuations. Most mountain ponds are open or partly shaded by trees rooted in drier

marginal soils. Vegetation structure varies from shrubland to herbaceous or comprises a patch-mosaic of the two; composition often exhibits distinct concentric zonation. Characteristic plants of semipermanently flooded ponds or zones include *Cephalanthus occidentalis*, *Dulichium arundinaceum*, *Sagittaria latifolia*, *Scirpus ancistrochaetus*, *Carex vesicaria*, and *Utricularia* spp. Species more typical of seasonally flooded ponds or zones include *Ilex verticillata*, *Vaccinium corymbosum*, *Smilax rotundifolia*, *Bidens discoidea*, *Carex stricta*, *Glyceria acutiflora*, *Hypericum mutilum*, and *Juncus* spp. Mountain ponds are important breeding habitats for amphibians and odonates (dragonflies and damselflies). Many of the known occurrences are protected on U.S. Forest Service land, but several privately owned ponds remain vulnerable to anthropogenic disturbances.

Examples:

- Montane herbaceous pond – (2) –Salt Pond Mountain, NRV
- Montane buttonbush pond – Big Pond, Kelly Knob, NRV
- Montane buttonbush pond – Day Creek, Glenwood
- Montane buttonbush pond – Potts Pond, New Castle

SINKHOLE PONDS

Depressions formed by the solution of carbonate rock that may be part of a karst system. Retention of water is the result of a restricted outlet or a lining of alluvial material that retards outflow of water. Sinkholes are associated with limestone geology that is limited on the Forest. Many sinkholes on private land have been altered, filled or used as trash dumps. See Mountain pond.

Example:

- Sinkhole Pond – Hagan Hall, Clinch

CALCAREOUS FENS AND SEEPS

Shrub and herbaceous wetlands of calcareous hillside or foot-slope spring seeps and seepage zones in small stream bottoms. These small-patch wetlands are widely scattered in carbonate rock districts of western Virginia, primarily in valleys of the Ridge and Valley province. Habitats typically have irregular or hummock-and-hollow microtopography, with areas of muck and abundant gravel or travertine marl deposits in the seepage rills. Soils, which are derived from underlying limestone or dolomite, are slightly acidic to moderately alkaline with high calcium levels. Strictly defined, fens are minerotrophic wetlands with organic soils > 40 cm deep. Because they usually have only superficial organic soil layers, most of the Virginia communities in this group are technically “seeps,” although we retain the term “fen” due to its wide application to various base-rich seepage wetlands in the southeastern United States; see Weakley and Schafale (1994) for additional discussion. The vegetation of these wetlands is often a patch-mosaic of shrubs and herbaceous openings. Common shrubs include *Salix* spp., *Alnus serrulata*, *Rosa palustris*, *Rhamnus alnifolia*, and *Photinia* (= *Aronia*) spp. Herbaceous species that are more or less diagnostic of calcareous fens or seeps include *Carex flava*, *Carex hystericina*, *Carex interior*, *Carex suberecta*, *Cypripedium reginae*, *Juncus brachycephalus*, *Liparis loeselii*, *Parnassia grandifolia*, *Pedicularis lanceolata*, and *Rhynchospora capillacea*. The ecological factors that keep fens and seeps open are not well understood, and many examples appear to be threatened by shrub and tree invasion. Ditching, grazing, and exotic weeds are additional threats to these naturally rare mountain wetlands. Calcareous fens are extremely rare on the Forest and are high priorities for conservation.

Example:

- Central Appalachian calcareous shrub fen/seep (3)– Dismal Creek, NRV

RARE MOUNTAIN WETLAND COMMUNITIES

MONTANE BASIC SEEPAGE SWAMPS

Saturated deciduous forests of gently sloping stream headwaters, large spring seeps, and lateral areas in ravines and stream bottoms where groundwater emerges at the base of slopes. These communities are locally scattered throughout western Virginia in areas underlain by metabasalt (greenstone), base-rich granite, calcareous shale, and limestone. Habitats usually have considerable cover of bouldery, cobbly, and gravelly alluvium; braided seeps and stream channels; moss (except *Sphagnum*)-covered hummocks; and muck-filled depressions. Soils range from strongly acidic to circumneutral, with moderately high calcium and magnesium levels. Tree layers are mixed, with variable combinations of *Acer rubrum*, *Fraxinus americana*, *Fraxinus nigra*, *Liriodendron tulipifera*, and *Betula* spp. *Lindera benzoin* is usually the most abundant shrub. Herbaceous cover is usually lush, and often features patch-dominance of *Symplocarpus foetidus*, *Veratrum viride*, and/or sedges, especially *Carex bromoides* and *C. prasina*. Additional characteristic herbs include *Caltha palustris*, *Chrysosplenium americanum*, *Saxifraga pensylvanica*, *S. micranthidifolia*, *Viola cucullata*, and various ferns. Most Virginia populations of the globally rare grass *Poa paludigena*, as well as of the globally rare Blue Ridge Mountain amphipod (*Stygobromus spinosus*), are associated with these swamps. This community is rare on the Forest.

Example:

- Montane Basic Seepage Swamp – Dismal Creek, NRV

APPALACHIAN BOGS

Saturated shrub and herbaceous vegetation of gently sloping, groundwater discharge zones along valley floors and headwaters streams in the mountain region of Virginia. Habitats supporting bogs are usually less than 0.4 hectare (one acre) in size but rarely range up to 4 hectares (10 acres) in the Southern Blue Ridge (Mount Rogers area). Fewer than twenty occurrences have been documented in the state. Soils, which vary from mineral to superficial or deep peat, are extremely acidic and support thick growths of *Sphagnum* and other mosses. The term “bog,” as applied to these wetlands, is a technical misnomer, since not all of these habitats are true peatlands and none is an ombrotrophic system. This term, however, is now so widely used in the southeastern United States as a descriptor for open, acidic seepage wetlands that we have adopted it here for consistency; see Weakley and Schafale (1994) for additional discussion. The ecological dynamics of these naturally rare communities are not well understood, and many examples are currently suffering from shrub and tree invasions. Factors that may have been responsible for creating and maintaining open bogs include fire, grazing, beavers, and deep deposition of unstable soils. Bog vegetation is frequently a mosaic of shrub patches and herbaceous openings. Several compositional variants associated with geography and elevation have been documented in Virginia. Species common to most variants include *Rhododendron maximum*, *Rhododendron catawbiense*, *Salix sericea*, *Alnus serrulata*, *Osmunda cinnamomea*, *Eriophorum virginicum*, *Carex atlantica*, and *Rhynchospora capitellata*. Species more restricted to low-elevation (below 900 m [3000 ft]) bogs of the Ridge and Valley and Cumberland Mountains include *Drosera rotundifolia*, *Andropogon glomeratus*, *Calopogon tuberosus*, *Platanthera ciliaris*, and *Calamagrostis coarctata*. Species more restricted to higher-elevation (mostly above 900 m [3000 ft]) bogs of the Southern Blue Ridge, Allegheny Mountains, and/or the highest mountains of the Ridge and Valley include stunted *Picea rubens*, *Ilex collina*, *Viburnum nudum* var. *cassinioides*, *Kalmia carolina*, *Vaccinium macrocarpon*, *Solidago patula*, *Chelone cuthbertii*, *Solidago uliginosa*, *Carex echinata*, *Sparganium erectum* ssp. *stoloniferum*, *Epilobium leptophyllum*, *Juncus brevicaudatus*, *Carex trisperma*, *Carex ruthii*, and *Houstonia serpyllifolia.*

Examples:

- Appalachian bog – Interior Seep, NRV
- Appalachian bog – Salt Pond Mt., NRV
- Appalachian bog – Mt. Rogers – Whitetop Rare Community Assemblage, NRA
- Appalachian bog – Potts Cove, New Castle

MOUNTAIN/PIEDMONT ACIDIC SEEPAGE SWAMPS

Saturated deciduous forests of gently sloping stream headwaters, large spring seeps, and ravine bottoms underlain by sandstone, quartzite, or base-poor granite. Certain basin wetlands that are saturated or seasonally saturated by perched groundwater support similar vegetation and probably belong in this group as well. These communities are locally scattered throughout the western Virginia mountains and Piedmont foothills, up to about 900 m (3000 ft) elevation. Hummock-and-hollow microtopography, braided streams, areas of coarse gravel and cobble deposition, muck-filled depressions, and abundant *Sphagnum* mats are typical habitat features. Soils are very strongly to extremely acidic, with low base status. Composition is variable over the range of this group, and several community types are probably represented. *Acer rubrum*, *Nyssa sylvatica*, *Liriodendron tulipifera*, and *Pinus rigida* are typical trees, while *Ilex verticillata*, *Rhododendron viscosum*, *Vaccinium corymbosum*, and *Vaccinium fuscatum* are abundant shrubs. *Symplocarpus foetidus* and *Veratrum viride* may be as dominant in these communities as in Montane Basic Seepage Swamps; herbs and low shrubs more abundant in or restricted to acidic swamps include *Osmunda cinnamomea*, *Rubus hispidus*, *Parnassia asarifolia*, *Platanthera ciliaris*, *Lycopodium obscurum*, *Carex debilis*, and *Carex folliculata*. Acid seeps are widely distributed across the forest. Most are very small in size and often consist of a seasonal spring that may stop flowing during the summer, but with soil moist enough to support such plant species as cinnamon fern, royal fern, rushes, sedges, and sphagnum moss. These seeps are often linear following a drainage and may be up to several meters wide and many meters long. Other seeps are larger in size and located in flatter areas and have a more constant source of water.

Example:

- Seepage marsh/wet meadow – Indian Grave Gap, Clinch

BEAVER MEADOWS

Beaver ponds and associated wetlands are scattered across the Forest. Beavers are becoming more numerous and these types of wetlands should increase in number. Beaver created wetlands are important breeding sites for odonates as well as generally being an important wetland element in the landscape. The main limiting factor may be conflicts between beaver impoundments and human interests.

Example:

- Glady Fork beaver meadow, Clinch

ROCKY BARS AND SHORES

Seasonally flooded to intermittently exposed shrub and herbaceous vegetation of rock outcrops and boulder or cobble bars on the shores and islands of large, high-gradient streams. Communities in this group are scattered throughout the Virginia mountains and Piedmont, primarily along major rivers and their larger tributaries. Habitats are influenced by a frequent regime of powerful flood-scouring, and soils consist of fine to coarse alluvial

RARE MOUNTAIN WETLAND COMMUNITIES

HIGH ELEVATION BALDS AND ROCKY SUMMITS

materials deposited among outcrops and boulders. Vegetation varies from densely shrubby to entirely herbaceous and sparse. Woody scrub, including battered *Platanus occidentalis*, *Betula nigra*, *Salix caroliniana*, *Salix nigra*, *Salix sericea*, *Salix eriocephala*, *Cornus amomum*, *Cornus obliqua*, *Cephalanthus occidentalis*, and *Viburnum* spp., is relatively common on stable bars and outcrops. Herbaceous composition is highly variable and includes species common to both ephemeral sand, gravel and mud bars (*e.g.*, *Justicia americana*) and more stable bedrock habitats (*e.g.*, *Andropogon gerardii*). A well-marked herbaceous variant of this group, known from bouldery banks and bars along a number of mountain streams, is dominated by *Carex torta*. Substantial data on the composition and environmental dynamics of rocky bar and shore communities in Virginia has yet to be collected. Examples of this type are very limited on the Forest because large, high gradient streams are not common.

Example:

- Rocky Bar and Shore – Chimney Cliffs Russell Fork, Clinch

RIVERSIDE PRAIRIES

Temporarily flooded, sparse shrub and dense grassland vegetation of stabilized outcrop or boulder bars along the shores of major mountain and Piedmont rivers. Communities in this group are globally and state-rare. In Virginia, most of the few known occurrences are located in the Potomac River gorge west of Washington, D.C. and along the James River near the Blue Ridge. Habitats supporting Riverside Prairies are elevated above mean water levels and are flooded-scoured at least once annually. Because of rockiness and limited alluvial deposition, soils are relatively shallow and site moisture conditions range from mesic to somewhat xeric. The vegetation is a lush assemblage of warm-season grasses and forbs, with scattered woody scrub such as stunted *Fraxinus pennsylvanica*, *Cornus amomum, Cornus obliqua*, and *Salix* spp.. Dominant grasses are usually *Andropogon gerardii*, *Sorghastrum nutans*, and *Panicum virgatum*. Other characteristic plants include *Baptisia australis*, *Spartina pectinata*, *Orbexilum pedunculatum* var. *psoralioides*, *Physostegia virginiana*, *Lespedeza violacea*, *Silphium trifoliatum*, *Veronicastrum virginicum*, *Helianthus occidentalis*, *Vicia americana*, *Pycnanthemum tenuifolium*, *Eleocharis compressa*, *Lathyrus venosus*, and *Zizia aurea*. Riverside prairies are found along major rivers which are very limited on the Forest.

Examples:

- Riverside prairie – James Riverside Prairie, Glenwood
- Riverside prairie (4)– James River Gorge Rare Community Assemblage, Glenwood

HIGH ELEVATION BALDS AND ROCKY SUMMITS

These communities are of two types: grassy balds and shrub (or heath) balds. Grassy balds are characterized by extensive areas dominated by herbaceous vegetation at high elevations (generally above 5,000 feet). They generally are found on ridgetops, domes, and gentle slopes. Shrub balds are typically found on steep exposed slopes and ridges at elevations ranging from 2,000 to 6,500 feet, and are characterized by dominance of ericaceous shrubs. These communities are found in the Appalachian region. Primary management needs are protection from recreational impacts and maintenance of desired vegetation using a variety of methods. This community includes Grassy Balds and Heath Balds as defined in the Southern Appalachian Assessment (SAMAB 1996: 181-182), and all Associations within the following Ecological Groups as defined by NatureServe (2001a):

436-10 Appalachian Highlands Grassy Balds

436-20 Appalachian Highlands Shrub Balds

Some environmental factors that occurred historically on heath balds include, high precipitation, extreme cold, frequent fog and wind. Conditions typically occurring on grassy balds include strong wind, high rainfall, frequent fog and extremes of temperature and moisture. Species composition varies regarding topographic features, moisture, exposure, types of disturbances and land use history. Oat grass tends to dominate the drier sites, while sedge tends to dominate the moist sites. One of the more distinctive characteristics of a grassy bald in relation to other high elevation communities is that it has extensive ranges dominated by herbaceous vegetation. (SAMAB 1996: 181-182)

The known distribution of rare grassy and heath bald communities is described in the Southern Appalachian Assessment Terrestrial Technical Report (SAMAB 1996:188-190). This report indicates that approximately two-thirds of the occurrences of grassy balds and nearly one half of the occurrences of heath balds in the southern Appalachian area are located on national forest lands.

There are four balds currently recognized on the Jefferson National Forest as shown in Table C-2 below along with their approximate acreage. Each of these are recognized as grass balds primarily, although relatively small areas of heath bald and high elevation rocky summits exist at Whitetop Mountain and within the Crest Zone balds. The heath balds and high elevation rocky summits within the Crest Zone are located predominately along Wilburn Ridge. These areas are very important to a variety of rare plants and animals. The primary threat to grassy bald habitat appears to be the increasing encroachment of woody stems such as hawthorne, red spruce, and various northern hardwood species. The primary threat to high elevation rocky summits is overuse by forest visitors for rock climbing and repelling which may damage the flora and fauna of these areas.

Table C-2. Existing bald habitats on the Jefferson National Forest and their approximate acreage

Bald Name	Acres	Ecological Section
Whitetop Bald	155	Blue Ridge
Elk Garden	80	Blue Ridge
Crest Zone	2,200	Blue Ridge
Chestnut Ridge	85	Ridge & Valley

The Jefferson National Forest plan objectives outlines restoration of historic communities, and maintenance of balds using such tools as hand cutting, grazing, prescribed burning, mechanical treatments, and herbicides. The Crest Zone bald will be managed under the 4.K.3 Special Area Management Prescription and Whitetop and Elk Garden balds will be managed under the 4.K.4 Special Area Management Prescription. Chestnut Ridge will be managed under the 4.A. Appalachian Trail Management Prescription.

CAROLINA HEMLOCK FORESTS

Carolina Hemlock Forests are dominated or co-dominated by Carolina hemlock (*Tsuga caroliniana*). These forests have a restricted range that mirrors the patchy distribution of Carolina hemlock, which is a Southern Appalachian endemic, occurring primarily in the Central and Southern Blue Ridge Province from Virginia south to northeastern Georgia and northwestern South Carolina with scattered occurrences in the western Piedmont and

CAROLINA HEMLOCK FORESTS

Ridge and Valley. In Virginia these forests occupy a few small, local, scattered sites on dry to xeric mountain slopes and rocky bluffs of the Blue Ridge and Ridge and Valley south of the James River. Sites are typically very steep and rocky, with shallow, nutrient-poor soils. Common associates are chestnut oak (*Quercus prinus)*, white oak (*Quercus alba)*, scarlet oak (*Quercus coccinea)*, pine species (*Pinus* spp), black gum (*Nyssa sylvatica)*, and various ericaceous shrubs like mountain laurel (*Kalmia latifolia*) and Catawba rhododendron (*Rhododendron catawbiense*). Stand structure (physiognomy) varies from closed-canopy to very open, approaching a woodland structure. These communities often occur in patch-mosaics with fire-influenced oak/heath and pine-oak/heath vegetation. Fire may be an important factor that has limited Carolina hemlock, evidently a fire-intolerant species, to rocky areas and bluffs that are somewhat protected from burning. Currently, the exotic insect pest, hemlock woolly adelgid (*Adelges tsugae*) poses a major threat to the viability and continued existence of Carolina hemlock (as well as Eastern hemlock (*Tsuga canadensis*)). Community types in this group are generally considered globally rare (Fleming and Coulling, 2001).

Over the full geographic range of this forest community, stands typically occur on narrow ridges and upper, north-facing rocky slopes. Four documented Virginia stands occurred at elevations from 591 m (1940 ft) to 1075 m (3525 ft). Sites include a narrow spur ridge crest, one upper slope, and two middle slopes, with south, southwest, and north aspects. Slopes are strongly convex. Two sites have substantial surface cover of rocks (70% and 31%), while the other two sites have negligible rock cover. Soils are extremely acidic (mean pH = 3.8), with very low calcium and magnesium levels and high iron and aluminum levels (Fleming and Coulling, 2001).

These rare forests are separated into three distinct subtypes that are included in one ecological group (401-20) as defined by NatureServe 2001:

- Carolina Hemlock / Mountain Laurel – Catawba Rhododendron Forest (typic type)
- Carolina Hemlock – (Pitch Pine, Table Mountain Pine, Virginia Pine) Forest (pine type)
- Carolina Hemlock – (Eastern Hemlock) / Great Rhododendron Forest (mesic type)

The typical expression of the type has a canopy dominated by *Tsuga caroliniana*, with minor associates of *Quercus prinus*, *Pinus virginiana*, *Pinus pungens*, *Pinus rigida*, *Nyssa sylvatica*, and *Quercus coccinea*. The shrub layer tends to be dense and dominated by ericaceous species, particularly *Kalmia latifolia*, *Rhododendron catawbiense*, *Rhododendron minus*, and *Leucothoe recurva*. Herbs are sparse but can include species such as *Xerophyllum asphodeloides* and *Polypodium appalachianum*.

Occurrences in Virginia are strongly dominated by *Tsuga caroliniana*, with *Quercus prinus* the most important canopy associate. *Quercus rubra*, *Quercus alba*, several *Pinus* spp., *Nyssa sylvatica*, and *Acer rubrum* are minor canopy associates. *Acer rubrum*, *Amelanchier arborea*, and *Sassafras albidum* are common understory trees, while *Rhododendron catawbiense*, *Kalmia latifolia*, and *Hamamelis virginiana* are dominant shrubs. Additional shrubs include *Pieris floribunda*, *Vaccinium pallidum*, *Rhododendron periclymenoides*, and *Gaylussacia baccata*. The herb layer is generally sparse with scattered individuals or patches of *Aralia nudicaulis*, *Carex pensylvanica*, *Chimaphila maculata*, *Cunila origanoides*, and *Hexastylis virginica*. Species richness ranges from 12 to 19 taxa per 400 m^2 (mean = 16).

Although no doubt a rare, small-patch community type in Virginia, additional examples are likely on the Forest and should be sought. The long-term impact of hemlock woolly adelgid on Carolina hemlock needs systematic study. The role of fires in the ecology of Carolina

Hemlock Forests is also unclear, since evidence of stand expansion following both following fires and periods of fire exclusion have been noted (Schafale and Weakley 1990). Rentch *et al.* (2000) found that Carolina hemlock dominating a site in Bottom Creek Gorge (Montgomery County, Virginia) was long-lived, very tolerant of drought stresses, and had reproduced episodically over the past 200 years. No evidence of fire is mentioned in this paper. Further description of the life history of Carolina hemlock can be found in Humphry (1989).

There are two rare plant species of concern that are associated with Carolina hemlock forests on the Jefferson National Forests – piratebush (*Buckleya distichophylla*) and of course Carolina hemlock. (Appendix F)

The known distribution of Carolina hemlock forests across the southern Appalachians includes five occurrences on National Forests, one occurrence in National Parks, and six occurrences under private ownership (SAMAB 1996). The fact that these communities are often small in size and that half of the known occurrences are on private lands leaves this community type vulnerable throughout it's range.

Representative sites in the Jefferson National Forest include:

- Glenwood Ranger District – James River Face Wilderness, near Marble Spring
- Mount Rogers NRA – Raven Cliff Recreation Area, SW slope of Gleaves Knob

BEECH GAP FORESTS

Beech Gap Forests are characterized by an overstory canopy dominated with American beech (*Fagus grandifolia*) on slopes and near mountain gaps above 4,000 feet. Virginia examples of the type occur at elevations from 3600 to 5200 ft. Mean elevation of 28 plot-sampled Virginia stands is 4400 ft. Habitats include a wide range of slope positions and aspects. Surface cover of bedrock and boulders is typically less than 25%, but occasionally higher. Soil samples collected from plot-sampling sites are consistently extremely acidic (mean pH = 3.8) with low base status. Beech gap forests are considered a distinctive subtype of the northern hardwood forest (Schafale and Weakley 1990). These forests have a very restricted range and typically occur as small acreages. As a result of exposure to severe climatic conditions (wind, snow, ice) the canopy trees typically have a distinctive stunted and gnarled appearance. Shrub layers are typically sparse, and herbaceous growth dense. This community is found in the Southern Appalachians and is endemic to the higher elevations of the Southern Blue Ridge in eastern Tennessee, western North Carolina, and southwestern Virginia. In the Virginia Blue Ridge, it is prevalent in the Mount Rogers – Whitetop Mountain area and at high elevations of the Iron Mountains (Fleming and Coulling, 2001). This community corresponds to Beech Gap Forest as defined in the Southern Appalachian Assessment (SAMAB 1996:179), and the following Associations defined by NatureServe (2001a, 2001b):

CEGL006246 Southern Appalachian Beech Gap (North Slope Tall Herb Type)

CEGL006130 Southern Appalachian Beech Gap (South Slope Sedge Type)

Beech Gap Forests are localized and found only on the Blue Ridge. These forests are typically found on convex, often south-facing slopes and ridge spurs with very infertile soils. *Fagus grandifolia* is the clear (sometimes overwhelming) canopy dominant, although yellow birch (*Betula alleghaniensis)* and sugar maple (*Acer saccharum)* are constant, less abundant canopy associates. Yellow buckeye (*Aesculus flava)* is essentially absent from this unit, while Fraser magnolia (*Magnolia fraseri)*, Eastern hemlock (*Tsuga canadensis)*, and red spruce (*Picea rubens)* are locally important canopy associates. Understory and

BEECH GAP FORESTS

BASIC MESIC FORESTS

shrub layers are dominated by young *Fagus* and *Acer saccharum*, in addition to striped maple (*Acer pensylvanicum)* and red maple (*Acer rubrum)*. This subtype often has a well-developed shrub layer with hobblebush (*Viburnum lantanoides)* dominant. Herb layers are moderately sparse to moderately dense and graminoid-rich; large patches of Northern woodland sedge (*Carex lucorum* var. *austrolucorum)* are particularly characteristic. Other frequent or abundant herbs are round-leaf violet (*Viola rotundifolia)*, fancy fern (*Dryopteris intermedia)*, Blue Ridge white heart-leaf aster (*Eurybia chlorolepis (= Aster chlorolepis))*, whorled aster (*Oclemena acuminata* (= *Aster acuminatus)*), shining clubmoss (*Huperzia lucidula)*, white wood-sorrel (*Oxalis montana)*, New York fern (*Thelypteris noveboracensis)*, hayscented fern (*Dennstaedtia punctilobula)*, sedge (*Carex aestivalis)*, sedge (*Carex debilis* var. *rudgei)*, and Northern shorthusk (*Brachyelytrum septentrionale)*. Mean species richness of plot-sampled stands is 37 taxa per ~0.1 acre (400 $m^{2)}$.

Most of the range of this forest is on public lands administered by the U.S. Forest Service (Pisgah, Nantahala, Cherokee, and Jefferson national forests) and National Park Service (Great Smoky Mountains National Park and Blue Ridge Parkway) (SAMAB 1996: 190),. There are less than ten occurrences of Beech Gap Forests in Virginia. Most are on the Jefferson National Forest in the Mt. Rogers area.

Examples of these occurrances are:

- Mount Rogers National Recreation Area – Whitetop Mountain (prevalent)
- Mount Rogers National Recreation Area – Beech Mountain (prevalent)
- Mount Rogers National Recreation Area – Mount Rogers & Elk Ridge (prevalent)
- Mount Rogers National Recreation Area – Pine Mountain (prevalent)
- Mount Rogers National Recreation Area – Iron Mountains / Roundtop (local, north slopes at high elevations)

BASIC MESIC FORESTS

These communities are typically characterized by complex multi-storied canopies, deciduous overstories and rich and diverse understories of calciphilic herbs, underlain by high-base geologic substrates with moist soil conditions. On moderate to high elevation sites, these communities are typically found in protected coves, and can be distinguished from more acidic mesic cove forests by the abundance of species such as white basswood (*Tilia americana*), yellow buckeye (*Aesculus flava*), black walnut (*Juglans nigra*), faded trillium (*Trillium discolor*), sweet white trillium (*Trillium simile*), black cohosh (*Cimicifuga racemosa*), blue cohosh (*Caulophyllum thalictroides*), whorled horsebalm (*Collinsonia verticillata*), mock orange (*Philadelphus inodorus*), sweet shrub (*Calycanthus floridus*), sweet cicely (*Ozmorhiza* spp.), doll's eyes (*Actaea racemosa*), maidenhair fern (*Adiantum pedatum*), and plantain-leaved sedge (*Carex plantaginea*). Good examples of moderate and high elevation basic mesic forests have a low incidence of white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), rhododendron (*Rhododendron* spp.), and Christmas fern (*Polystichum acrostichoides*) since these species are found in more acidic soil conditions.

On lower elevation sites, these communities are more typically found on north slopes, where dominant and characteristic overstory species are American beech (*Fagus grandifolia*) and northern red oak (*Quercus rubra*), with tulip poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), shagbark hickory (*Carya ovata*), or white ash (Fraxinus *americana*), with southern sugar maple, chalk maple, painted buckeye (*Aesculus sylvatica*), and pawpaw (*Asimina triloba*) in the midstory and shrub layers, and understories that include faded trillium, nodding trillium (*Trillium rugelii*), black cohosh, doll's eyes, foam flower (*Tiarella cordifolia var. collina*), bloodroot (*Sanguinaria*

canadensis), bellworts (*Uvularia sp.*) and trout lilies (*Erythronium spp.)*. Good examples of low elevation basic mesic forests have a low incidence of sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), and exotics such as Japanese honeysuckle (*Lonicera japonica*) or Chinese privet (*Lingustrum vulgare*).

Basic mesic forest communities are found in both the Appalachian and Piedmont regions. This community includes the following Associations defined by NatureServe (2001a, 2001b):

CEGL007711	Southern Appalachian Cove Forest (Rich Foothills Type)
CEGL007695	Southern Appalachian Cove Forest (Rich Montane Type)
CEGL008488	Southern Ridge and Valley Basic Mesic Hardwood Forest

For the Jefferson National Forest the basic mesic rare community type is composed of two ecological communities as defined by the Virginia Division of Natural Heritage (Fleming and Coulling 2001): 1) Rich Coves and Slope Forests, including the Central Appalachian Rich Cove Forest (sugar maple-basswood type) and Southern Appalachian Rich Cove Forest (typic type), but not the Central Appalachian Rich Cove Forest (tuliptree-northern red oak-cucumbertree type); and 2) Basic Mesic Forests. These ecological communities are described as follows:

Rich cove and slope forests: Mixed hardwood forests of fertile, mesic, mountain-slope habitats at elevations ranging from about 300 m (1000 ft) to about 1100 m (3600 ft). Distributed locally throughout western Virginia, these forests are strongly associated with moist, sheltered, landforms (*i.e*., coves, ravines, and concave lower slopes). Soils may be weathered from various substrates and generally range from strongly acidic to moderately alkaline, with high base saturation. In these habitats, soil fertility appears to be strongly correlated with high base cation levels (particularly calcium, magnesium, and manganese) rather than with high pH, and higher-elevation sites often have soils with surprisingly low pH. Characteristic trees include *Acer saccharum*, *Tilia americana* var. *americana* and var. *heterophylla*, *Fraxinus americana*, *Liriodendron tulipifera*, and *Aesculus flava*. Herbaceous growth is lush with spring ephemerals and leafy, shade-tolerant forbs such as *Caulophyllum thalictroides*, *Impatiens pallida*, *Trillium grandiflorum*, *Laportea canadensis*, and many others. Compositional variation related to substrate and elevation is complex and will require intensive future study. The principal threats to rich cove forests are logging and invasion by *Alliaria petiolata* and other shade-tolerant, exotic weeds.

Examples:

- Central Appalachian rich cove forest (sugar maple-basswood type) -Rich cove/mesic slope forest – Lovelady Coves, Clinch
- Central Appalachian rich cove forest (sugar maple-basswood type) - Rich cove/mesic slope forest (4) – Cliff Mt., Clinch
- Central Appalachian rich cove forest (sugar maple-basswood type) - Rich cove/mesic slope forest – Lower Little Stony Creek, Clinch
- Central Appalachian rich cove forest (sugar maple-basswood type) - Rich cove/mesic slope forest (2) – Staunton Creek Gorge, Clinch
- Central Appalachian rich cove forest (sugar maple-basswood type) - Rich cove/mesic slope forest – Whitetop Mt., NRA
- Central Appalachian rich cove forest (sugar maple-basswood type) – Apple Orchard Falls, Apple Orchard Mt., Glenwood

BASIC MESIC FORESTS

- Southern Appalachian rich cove forest (typic type) – Raven Cliff Horse Camp, NRA

Basic Mesic Forests: Mixed hardwood forests of fertile, mesic, low-elevation habitats in the Coastal Plain, Piedmont and lower slopes and valleys of the mountain region. Typical sites are deep ravines, sheltered north- or east-facing slopes subtending large streams and rivers, and occasionally well-drained floodplain terraces. Soils are usually weathered from carbonate or mafic bedrock, or from calcareous, shell-rich deposits in the Coastal Plain. Dominant trees include the species of Rich Cove and Slope Forests, as well as *Quercus muehlenbergii*, *Acer nigrum*, *Acer barbatum* (Coastal Plain and Piedmont only), *Fagus grandifolia*, *Carya cordiformis*, and *Juglans nigra*. Shrub and herb layers contain a number of species that are atypical of mountain slopes, such as *Asimina triloba*, *Jeffersonia diphylla*, *Erigenia bulbosa*, and *Trillium sessile*. The extent and viability of basic mesic forests has been reduced by repeated logging and invasive exotic weeds.

Example:

- Central Appalachian/piedmont rich slope forest (twinleaf-canada waterleaf type) – Smith Tract (lower slope along James River), Glenwood

The Southern Appalachian Assessment (SAMAB 1996:49) combined mesic and xeric mafic communities, and concluded that only 25% of the known occurrences for species associated with mafic and other calcareous habitats, occurred on National Forest land.

ROCK OUTCROPS AND CLIFFS

ROCK OUTCROPS AND CLIFFS

Rock outcrops and cliffs are defined here as rare communities and include the following types of communities as defined in the Southern Appalachian Assessment (SAMAB 1996:179-186), and by NatureServe (2001). Regional descriptions are given followed by the relevant ecological communities for the Jefferson National Forest from Fleming and Coulling (2001), and Fleming, et al. (2001).

TALUS SLOPES

Regional Description. This community is characterized by nonvegetated or sparsely vegetated accumulations of rock at 2,500 to 4,600 feet elevation. It is found in the Appalachian region and is distinguished from Forested Boulderfields by the lack of trees, and from rocky summits by its occurrence on side slopes as opposed to ridges and peaks. This community includes Talus Slopes as defined in the Southern Appalachian Assessment (SAMAB 1996:186), and all Associations within the following Ecological Group as defined by NatureServe (2001):

430-10 Eastern Acid Talus

Jefferson National Forest Ecological Communities

Moss / lichen boulderfields: Non-vascular vegetation occupying exposed, minimally weathered boulderfields on mountain ridges of western Virginia. Boulderfield habitats have resulted from periglacial phenomena and the collapse of resistant strata from weathering and erosion of weaker underlying rocks. The most numerous and extensive exposed boulderfields are composed of sandstone or quartzite, with a few occurrences on metabasalt at higher elevations of the Northern Blue Ridge. These habitats, where few vascular plants survive, are often densely populated by overlooked or cryptic species of lichens and moss. Dominant on boulders are umbilicate "rock tripe" lichens, including *Umbilicaria mamulata, U. muehlenbergii,* and *Lasallia papulosa*. Also common are small, round, tightly attached patches of the bright yellow-green lichen *Dimelaena oreina*. Sheltered surfaces where detritus collects are often colonized by mosses. The most

common of these are *Dicranum* spp., but *Hedwigia ciliata* and other species are also present. The fern *Polypodium appalachianum* occurs frequently on weathered edges. Progressive, long-term weathering of exposed boulderfields results in slow invasion by trees such as *Betula alleghaniensis* and *Sorbus americana* at higher elevations, and *Betula lenta* at lower elevations. Open boulderfields are favored by timber rattlesnakes (*Crotalus horridus horridus*), which often locate their hibernacula in the rocky substrates. These small-patch community types are uncommon and are primarily threatened by air pollution and acid rain.

Example:

- Devils Marbleyard – James River Face Wilderness, Glenwood

CLIFFS AND BLUFFS

Regional description. These communities are characterized by steep, rocky, sparsely-vegetated slopes, usually above streams or rivers. Cliff communities may be dry or wet, and include communities associated with waterfalls, such as spray cliffs and rock houses. These communities are found in the Appalachian region. This community includes Calcareous Cliffs, Mafic Cliffs, Sandstone Cliffs, and Spray Cliffs as defined in the Southern Appalachian Assessment (SAMAB 1996:179,182,183,185), and all Associations within the following Ecological Groups as defined by NatureServe (2001a):

430-40	Eastern Dry Acid Cliffs
430-45	Eastern Moist Acid Cliffs
430-50	Eastern Dry Alkaline Cliffs
430-55	Eastern Moist Alkaline Cliffs
430-60	Appalachian Highlands Northern White Cedar Bluffs
430-65	Appalachian Highlands Rock Houses

Jefferson National Forest Ecological Communities

Mountain Acidic Cliffs: Sparse woodland, shrub, and herbaceous vegetation of very steep to precipitous sandstone, acidic shale, and quartzite outcrops, cliffs, and rocky escarpments. These communities are scattered throughout the mountain and western Piedmont foothill regions of Virginia, but are poorly inventoried and documented at present. Acidic cliffs occur under several geomorphic conditions, especially on slopes undercut by large streams or rivers and on resistant caprock exposed by differential weathering of weaker underlying strata. Habitats vary with aspect and other environmental conditions. Local zones of ephemeral seepage may be present. The vegetation is generally dominated by lichens, with umbilicate "rock tripe" species such as *Umbilicaria* spp. and *Lasalia papulosa* especially prominent. Vascular plants are confined to crevices and humus-covered shelves. On drier, south- to west-facing cliffs, vascular species may be very sparse and consist of stunted pines *(Pinus virginian*a, *P. pungen*s), ericaceous shrubs, and occasional erbaceous lithophytes such as mountain spleenwort *(Asplenium montanu*m), silverling *(Paronychia argyrocom*a), and wild bleeding heart *(Dicentra eximi*a). Sheltered, north- to east-facing cliffs often support more diverse shrub and herbaceous flora. Characteristic species include stunted eastern hemlock *(Tsuga canadensis*), evergreen rhododendrons *(Rhododendron maximum* and *R. catawbiens*e), rock polypodies *(Polypodium appalachianum* and *P. virginianu*m), Michaux's saxifrage *(Saxifraga michauxi*i), rock alumroot *(Heuchera villosa* var. *villos*a), and wavy hairgrass *(Deschampsia flexuosa* var. *flexuos*a). Shaded grottoes and "rock houses" on cliffs of the Cumberland Mountains in southwestern Virginia support colonies of little-leaved alumroot *(Heuchera parviflora* var. *parviflor*a) and round-leaved catchfly *(Silene rotundifoli*a). There are few threats to acidic cliffs, except for local damage by rock climbers.

ROCK OUTCROPS AND CLIFFS

Example:

- Montane acidic cliff – Raven Cliff, NRA

Xeric calcareous cliffs: Sparse shrub and herbaceous vegetation of very steep to precipitous, south- to west-facing limestone and dolomitic outcrops, cliffs, and rocky escarpments. In Virginia, communities of this group are confined to carbonate rock districts of the Ridge and Valley province and Cumberland Mountains. Habitats are usually undercut by large streams or rivers and are situated on upper slopes or crests with predominantly convex slope shapes. Microtopography is rugged and complex, with very high cover of exposed bedrock. The surficial rock and associated edaphic stresses limit overall vegetation cover, woody growth, and species richness. Scattered scrub growth of *Juniperus virginiana*, *Quercus muehlenbergii*, *Philadelphus hirsutus*, *Toxicodendron radicans*, and other shrubs is typical. Prevalent among herbaceous species are lithophytes such as *Asplenium resiliens*, *Asplenium ruta-muraria*, *Carex eburnea*, *Draba ramosissima*, *Melica nitens*, *Minuartia michauxii*, *Muhlenbergia cuspidata*, *Pellaea atropurpurea*, *Pellaea glabella*, *Phlox subulata*, and *Symphyotrichum oblongifolium* (= *Aster oblongifolius*). These small-patch communities are generally considered state-rare, but their conservation status needs further investigation. Because of inaccessible locations, stands seem immune from many types of anthropogenic disturbance. Scattered individuals of exotic weeds sometimes find footholds but are largely excluded from cliffs by the hot, xeric, rocky substrates. Reference: Fleming (1999).

Example:

- Central Appalachian limestone/dolomite woodland – Cliff Mt., Clinch

Northern white-cedar slope forests: Mixed, largely coniferous forests in which *Thuja occidentalis* is a dominant or co-dominant tree. This is a rare natural community occurring in small, isolated patches from the Ridge and Valley province of western Virginia south to the Eastern Highland Rim, Ridge and Valley, and low Blue Ridge regions of Tennessee. Habitats are on steep, rocky, mesic to submesic slopes that are undercut by streams and have west to north aspects. Underlying bedrock is usually limestone or dolomite, but one Virginia site is underlain by calcareous Silurian sandstone. *Pinus strobus* and/or eastern hemlock *Tsuga canadensis* are the most frequent (often co-dominant) tree associates, with scattered hardwoods also present. Understory and herbaceous layers are variable but generally contain a number of typical calciphiles such as *Berberis canadensis*, *Dirca palustris*, *Galium boreale*, and *Hepatica nobilis* var. *acuta*.

Example:

- Southern Appalachian northern white-cedar slope forest – Dismal Creek, NRV

Spray Cliffs: Constantly wet rock faces within the spray or splash zone of waterfalls, or sheltered cliffs saturated with permanent seepage. Communities in this group have been well documented in North Carolina, but have not been studied in Virginia. A few examples, scattered over the entire mountain region of the state, are known from qualitative reports. At this time, very little can be said about the ecological dynamics or floristic composition of these occurrences. Based on casual observations, mosses and liverworts are usually the dominant plants, with vascular species more sparsely rooted in crevices and on moss- or humus-covered shelves. Among the more characteristic or abundant vascular plants are brook saxifrage *(Boykinia aconitifoli*a), small enchanter's nightshade *(Circaea alpina* ssp. *alpin*a), little-leaved alumroot *(Heuchera parviflora* var. *parviflor*a), rock clubmoss *(Huperzia porophil*a), saxifrages *(Saxifraga caroliniana* and *S. micranthidifoli*a), mountain meadowrue *(Thalictrum clavatu*m), and various lithophytic ferns. Very few waterfalls in Virginia are large and constant enough to provide requisite conditions for spray cliff communities. Good examples, therefore, should be high priorities for protection. A full

understanding of Virginia's spray cliff vegetation and its relationship to similar vegetation further south in the Appalachians will require comprehensive bryophyte inventories.

Example:

- Sandstone seepage cliff - Raven Cliff, NRA

ROCK OUTCROPS

Regional description. These communities are characterized by significant areas of exposed, usually smooth, exfoliating granite or related rocks, with scattered vegetation mats and abundant lichens. These communities are found in both the Appalachian and Piedmont regions. This community includes Granitic Dome and Granitic Flatrock as defined in the Southern Appalachian Assessment (SAMAB 1996:180-181), and all Associations within the following Ecological Groups as defined by NatureServe (2001a):

435-10 Appalachian Highlands Granitic Domes

435-20 Appalachian Highlands Grantic Flatrock

These communities are not known to occur outside the Piedmont in Virginia.

ROCKY SUMMITS

Regional description. This community is characterized by sparsely vegetated outcrops of fractured, irregular rock found above 4,000 feet elevation on peaks, ridges, and upper slopes. It is distiguished from rock outcrop communities by its fractured, irregular rock surface, and from talus slopes and cliff communities by its topographic position on or near summits. It differs from forested boulderfields in its general lack of forest cover. This community is found in the Appalachian region. This community includes High Elevation Rocky Summits as defined in the Southern Appalachian Assessment (SAMAB 1996:182), and all Associations within the following Ecological Group as defined by NatureServe (2001a):

436-30 Appalachian Highlands Rocky Summits

Jefferson National Forest Ecological Communities

High-elevation outcrop barrens: Scrub and herbaceous vegetation of exposed, metamorphic, igneous, and sedimentary outcrops in the Blue Ridge and Ridge and Valley provinces. The lower-elevation limit of these barrens is about 900 m (3000 ft) in northern Virginia, increasing to about 1200 m (4000 ft) in the Southern Blue Ridge. The full range of environmental and compositional variation in this group, especially in the Southern Blue Ridge occurrences, has not been documented. In the Northern Blue Ridge, high-elevation outcrop barrens occupy granitic and metabasaltic outcrops of mostly west- to north-facing upper slopes and summits. Known examples in the Southern Blue Ridge occur on amphibolite (Buffalo Mountain, Floyd Co.) and rhyolite (Mount Rogers area). A few local examples of high-elevation quartzite barrens occur in the northern Ridge and Valley. While bedrock chemistry no doubt exerts some influence on floristics, geologically heterogeneous habitats share similar microclimatic and edaphic stresses. The habitats are wind-blasted and subject to severe winter temperatures and ice, while oligotrophic soils consist of very thin, local veneers of organic matter, gravel, or silt. Vegetation is usually a patchwork of shrub thickets, herbaceous mats, and lithophytic lichens. Characteristic shrubs are *Sorbus americana*, *Photinia melanocarpa* (= *Aronia melanocarpa*), *Prunus pensylvanica*, *Diervilla lonicera*, *Physocarpus opulifolius* (on mafic outcrops), *Kalmia latifolia*, and severely stunted *Betula alleghaniensis*. Typical herbs are *Saxifraga michauxii*, *Solidago simplex* var. *randii*, *Minuartia groenlandica*, *Hylotelephium telephioides* (=*Sedum telephioides*), *Sibbaldiopsis tridentata*, *Deschampsia flexuosa*, and

ROCK OUTCROPS AND CLIFFS

Polypodium appalachianum. A number of remarkable, long-range boreal disjuncts, *e.g.*, *Juncus trifidus*, *Huperzia appalachiana*, and *Trisetum spicatum*, are associated with these outcrops. Community types in this group are considered very rare in Virginia and globally. Threats include trampling and destruction of fragile vegetation mats and invasive exotic weeds such as *Poa compressa* and *Rumex acetosella*.

Example:

- High-elevation outcrop barren (black chokeberry igneous/metamorphic type) – Mt. Rogers, NRA

FORESTED BOULDERFIELDS

Regional description. This community is characterized by rock fields, found at 3,500 to 5,300 feet elevation, that support a variable density of trees, typically dominated by yellow birch. It is distinguished from talus slopes by the presence of trees. It is found in the Appalachian region. This community includes Boulderfields as defined in the Southern Appalachian Assessment (SAMAB 1996:179), and the following Associations as defined by NatureServe (2001a, 2001b):

CEGL004982	Southern Appalachian Hardwood Boulderfield Forest (Typic Type)
CEGL006124	Southern Applachian Boulderfield Forest (Currant and Rockcap Type)

Jefferson National Forest Ecological Communities

High-elevation boulderfield forests and woodlands: Open forests and woodlands occupying relatively unweathered boulderfields at elevations above 900 m (3000 ft) in both the Blue Ridge and Ridge and Valley provinces. *Betula alleghaniensis*, *Sorbus americana*, and *Acer spicatum* are the typical dominants of boulderfields weathered from granite, metabasalt, quartzite, and sandstone at the highest elevations. These habitats are usually best developed on north-facing slopes. Trees here are typically gnarled and widely spaced because of difficult establishment and repeated damage from wind and ice. Typical shrubs include *Ribes* spp. and *Sambucus racemosa* (= *Sambucus pubens*). The high cover of exposed rock in these habitats tends to limit overall species richness and herbaceous density. Cool microclimates favor the occurrence of many northern and high mountain species. The globally rare and federally listed Shenandoah salamander (*Plethodon shenandoah*) is endemic to three thinly wooded, high-elevation boulderfields on the Northern Blue Ridge.

Examples:

- Southern Appalachian high-elevation boulderfield forest – North slope Pine Mt., NRA
- Southern Appalachian high-elevation boulderfield forest – North slope Mt. Rogers, NRA
- Southern Appalachian high-elevation boulderfield forest – North slope Whitetop Mt., NRA

Low-elevation boulderfield forests and woodlands: Open forests and woodlands occupying partially weathered boulderfields at elevations below 975 m (3200 ft). These habitats are widely scattered throughout the mountains on steep sideslopes of ridges, often in zones below large outcrops. Stand composition varies greatly with substrate, aspect, and slope position. *Betula lenta* is often the sole invader of large-block sandstone and quartzite boulderfields, forming pure stands of gnarled, spreading trees. Here, *Parthenocissus*

quinquefolia is sometimes the only low-growing plant able to become established in the deep interstices between boulders. On somewhat more weathered or less blocky boulderfields, *Quercus prinus* or mixtures of *Quercus prinus*, *Quercus rubra*, *Nyssa sylvatica*, and *Betula lenta*, along with a greater diversity of shrubs and herbs, may prevail. Cool, north-facing, sandstone/quartzite boulderfields frequently support *Tsuga canadensis* and, locally, disjunct populations of *Betula papyrifera* var. *cordifolia*. On base-rich metabasalt and granitic boulderfields of the Northern Blue Ridge, *Tilia americana*, *Fraxinus americana*, and *Quercus rubra* are characteristic trees. Dolomitic or limestone boulderfields support open stands of *Tilia americana* and *Aesculus flava*, with a variety of mosses, *Cystopteris bulbifera*, and other calciphilic herbs forming dense mats on rock surfaces. Communities in this group are uncommon in Virginia; their classification and distributional status need further assessment.

Example:

- Appalachian calacareous boulderfield forest – North slope Staunton Creek Gorge, Clinch

The known regional distribution of rare rock outcrop and cliff communities is described in the Southern Appalachian Assessment Terrestrial Technical Report (SAMAB 1996:188-190). According to this source, approximately one third of all occurrences of these communities in the southern Appalachian area are located on national forest lands.

TABLE MOUNTAIN PINE WOODLANDS

This community is characterized by a dominant or significant component of Table Mountain pine (*Pinus pungens*) in the overstory, often in combination with pitch pine (*Pinus rigida*). This forested community is a species-poor, fire-influenced, mixed woodland of xeric, exposed mountain habitats. Sites are typically located on convex, south to west slopes of steep spur ridges, narrow rocky crests, and cliff tops. Pine–oak/heath woodlands (of which Table Mountain Pine Woodlands are part of) are widespread throughout the Central and Southern Appalachian region. In Virginia, the type ranges through the Blue Ridge and Ridge and Valley provinces with a few outliers in the Piedmont. The Table-Mountain Subtype occurs throughout this range, while the Pitch Pine Subtype is more confined to the northern two-thirds of the state's mountain region. They occur at elevations from below 300 m (1000 ft) to more than 1200 m (4000 ft) on various substrates, but most commonly on acidic, sedimentary and metasedimentary substrates, *e.g.*, sandstone, quartzite, and shale, but the type is most frequent and extensive on sandstone and quartzite. Soils are very infertile, shallow, and droughty. Thick, poorly decomposed duff layers consisting primarily of pine needles, along with dead wood and flammable shrubs, contribute to a strongly fire-prone habitat (Groeschl *et al* 1992). The influences of past fires are seen in the even-aged character of overstory trees to numerous pieces of charred wood debris and charcoal in duff layers (Fleming and Coulling, 2001).

Short-statured *Pinus pungens* and *Pinus rigida* are usually dominants forming an open canopy, often with co-dominant *Quercus prinus*. Less important tree associates include *Quercus coccinea*, *Pinus virginiana*, and *Sassafras albidum*. Except in the Piedmont stands, *Quercus ilicifolia* is characteristic (often abundant) in the shrub layer, along with various ericaceous shrubs. Colonial shrubs usually pre-empt available microhabitats for most herbaceous species, but *Pteridium aquilinum* var. *latiusculum* and the spectacular *Xerophyllum asphodeloides* are often competitive enough to achieve significant cover. Periodic fire is an important ecological process that provides opportunities for regeneration of both pines and less competitive herbaceous species, while setting back successional encroachment of potential canopy oaks (especially *Quercus prinus*). On cliffs and other very rocky sites, the vegetation is self-perpetuating due to extreme edaphic

TABLE MOUNTAIN PINE WOODLANDS

conditions. Fire reduction and the insect pest, southern pine beetle (*Dendroctonus frontalis*) are the most serious threats to communities of this group. The state-rare northern pine snake (*Pituophis melanoleucus melanoleucus*) and several rare moths, all bear oak (*Quercus ilicifolia*) feeders, are locally associated with these woodlands (Fleming and Coulling, 2001).

This community corresponds to Table Mountain pine/Pitch Pine Woodlands as defined in the Southern Appalachian Assessment (SAMAB 1996:185-186), and all Associations within the following Ecological Group as defined by NatureServe (2001a):

401-80 Appalachian Highlands Pitch and Table Mountain pine Woodlands.

This community type is closely related to other associations classified in the *Pinus pungens* - (*Pinus rigida*) Woodland Alliance. It is thought to differ in the shrub layer dominance of *Quercus ilicifolia*, a northern species which is absent in similar communities south of Virginia, the presence of several other northern species, and the absence of a number of characteristic Southern Appalachian species such as *Gaylussacia ursina*, *Rhododendron carolinianum*, *Rhododendron minus*, *Leiophyllum buxifolium*, and *Fothergilla major*.

There are significant differences in site conditions associated with the two subtypes of this community. The Table-Mountain Pine Subtype occurs at low to middle elevations (mean of plot-sampled stands = 647 m or 2147 ft) and tends to occupy steep (mean slope = 23º) sideslopes with significant rock cover (mean = 14%). The Pitch Pine Subtype occurs at middle to high elevations (mean of plot-sampled stands = 983 m or 3225 ft) and tends to occupy moderately steep to sub-level (mean slope = 7º) upper slopes and crests with little rock cover (mean = 1%) and very dense duff. Although strongly fire-prone habitats influence vegetation structure and composition of both subtypes, the Table-Mountain Pine Subtype tends to be more influenced by edaphic stresses because of its frequent association with cliffs and outcrop areas.

Examples of Table Mountain Pine Woodlands are numerous and widespread on the Jefferson National Forest, although most occurrences consist of small acreages on slopes with a southerly aspect surrounded by oak dominated forests. Such areas include James River Face Wilderness, Broad Mountain, Bald Mountain, Peters Mountain, Potts Mountain, Brush Mountain, Walker Mountain, Brushy Mountain, and Pine Mountain.

TIMBER ANALYSES
Suitability, Sale Program, & Silvicultural Systems

APPENDIX D

INTRODUCTION

This appendix describes the analysis of lands suitable and not suitable for timber production, the Allowable Sale Quantity (ASQ), Total Timber Sale Program, and describes conditions where different silvicultural systems could be used.

TIMBER SUITABILITY ANALYSIS

During forest land and resource management planning, the Forest Service is required to identify lands unsuited for timber production (16 USC 1604(k); 36 CFR 219.14). This identification process involves three stages of analysis. Stage I analysis identifies lands tentatively suitable for timber production. Stage II analysis is designed to explore the financial aspect of varying intensities of timber management on lands identified as tentatively suitable for timber production from Stage I. Stage III analysis identifies lands as unsuited for timber production under the alternative selected in the revised Forest Land and Resource Management Plan.

STAGE I: PHYSICAL SUITABILITY

The first stage of the timber suitability analysis addresses the administrative and physical suitability of the land to be managed for the production of timber. The analysis involves these categories:

- Lands that do not meet the definition of forest land.
- Lands that have been administratively or congressionally withdrawn from timber production by an act of Congress, the secretary of agriculture, or the chief of the Forest Service.
- Forest lands incapable of producing industrial wood.

Table D-1. Stage I-Acres Tentatively Suitable for Timber Production

Classification	Acres
Total National Forest Land	723,300
Non-forest Land (includes water)	(12,000)
Forest Land	711,300
Forest Land-withdrawn for existing, designated wilderness	(57,800)
Forest Land-incapable of producing industrial wood	(3,400)
Forest Land-irreversible damage likely to occur; not restockable	(4,300)
Forest Land-inadequate information	(200)
Tentatively Suitable Forest Lands	645,600

TIMBER SUITABILITY ANALYSIS

STAGE II: FINANCIAL ANALYSIS

STAGE III: IDENTIFICATION OF SUITABLE ACRES

TIMBER SALE PROGRAM

- Lands where technology is not available to ensure timber production from the land without irreversible soil and water resource damage.
- Lands where there is no reasonable assurance that they can be adequately restocked.
- Lands where there is inadequate information, primarily due to recent acquisition.

Table D-1 displays the determination of those lands on the Jefferson National Forest tentatively suitable for timber production.

STAGE II: FINANCIAL ANALYSIS

The second stage analysis is designed to explore the financial efficiency of different timber intensities on the lands identified as tentatively suitable for timber production in Stage I. It does not identify any lands as unsuitable for timber production. Stage III analysis considers the results of these financial efficiencies in making the final determination of lands suited for timber production.

STAGE III: IDENTIFICATION OF SUITABLE ACRES

The third stage analysis is accomplished during the formulation of alternatives. Several criteria were used during this stage to identify lands in this category:

- Based upon consideration of multiple-use objectives for the alternative, the land is proposed for resource uses that preclude timber production. However, in some management prescriptions that are classified as unsuitable for timber production, timber harvest may occur to meet the desired condition of other resources.
- Other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met.
- The lands are not cost-efficient, over the planning horizon, in meeting forest objectives, which includes timber production.

Table D-2 on the facing page shows the results of the Stage III analysis.

TIMBER SALE PROGRAM

The Allowable Sale Quantity (ASQ) is defined as the maximum amount of timber that may be sold on lands suitable for timber production during a decade of implementing the Forest Plan (FSH 2409.13). The ASQ plus volume produced on lands unsuitable for timber production through achievement of desired conditions or salvage operations comprise the total Timber Sale Program. Table D-3 displays a breakdown of the ASQ and Total Timber Sale Program for the first decade of the Revised Plan. The ASQ is a decadal ceiling, there are no constraints on the amount of volume that can be sold annually on the Forest.

Table D-3. ASQ and Total Timber Sale Program for the First Decade

Total Allowable Sale Quantity	38.5 MMCF
Total Non-Scheduled Volume	1.2 MMCF
Total Timber Sale Program	39.7 MMCF

Table D-2. Stage III-Land Classified as Suitable for Timber Production

Classification		Acres
Tentatively Suitable Forest Land – from Stage 1 Analysis		645,600
Land Withdrawn for Other Resource Purposes as Unsuitable for Timber Harvest:	Custodial Management (0B)	(3,500)
	Recommended Wilderness Study Areas (1B)	(25,200)
	Eligible Wild, Scenic and Recreational River (2C's)	(5,300)
	Appalachian National Scenic Trail Corridor (4A)	(30,700)
	Geologic and Paleontogical Areas (4C1)	(1,500)
	Botanical and Zoological Areas (4D)	(4,700)
	Cultural and Heritage Areas (4E1a)	(200)
	Scenic Areas (4F)	(1,000)
	Special Areas – Hoop Hole, Mount Rogers Crest Zone, Whitetop Mountain, Whitetop Laurel Creek, North Fork of Pound and portions of North Creek (4K's)	(25,900)
	Special Use Areas (5A, 5B, 5C)	(4,100)
	Old Growth Areas (6A, 6B, 6C)	(31,300)
	Scenic Byway Corridors (7A)	(1,800)
	Concentrated Recreation Zones (7D)	(6,000)
	Dispersed Recreation Areas (7E1)	(19,600)
	Pastoral Landscapes (7G)	(3,700)
	Peaks of Otter Salamander Primary Habitat Conservation Area (8E2a)	(2,400)
	Indiana Bat Primary Cave Protection Areas (8E4a)	(900)
	Reference Watersheds (9A2)	(<100)
	Aquatic Habitat Areas (9A4)	(6,500)
	Rare Communities (9F)	(7,400)
	Maintenance and Restoration of Upland and Bottomland Hardwoods (9G1)	(100)
	Remote Backcountry Areas (12A, 12B, 12C)	(110,800)
	Semi-Primitive Lands within Suitable Prescriptions	(4,300)
	Riparian Habitat within Suitable Prescriptions	(39,300)
Economically inefficient lands[1]		(50,500)
Total Suitable Land		258,900

[1] Economically inefficient lands include all Site Index 40 lands and those Site Index 50 lands that are steep (defined by land classes 540 and 800-899), with the exception of those having a forest type of 48, 56, 53, and 81 (northern red oak-hickory-yellow pine, chestnut oak, white oak-northern red oak-hickory, and sugar maple-beech-yellow birch).

VEGETATION MANAGEMENT PRACTICES

SILVICULTURAL SYSTEMS

VEGETATION MANAGEMENT PRACTICES

This section evaluates the usefulness of various vegetation management practices, with a major focus on silvicultural systems used to manage vegetation in management areas suitable for timber production. This appendix recommends practices that meet NFMA regulations for manipulating vegetation to regenerate stands to desirable native species, usually of the pre-harvest forest type. This Appendix was prepared for compliance with 36 CFR 219.

SILVICULTURAL SYSTEMS

There are three silvicultural systems used to provide regulated and sustainable yield of wood products for local wood processing facilities on the Jefferson National Forest.

The EVEN-AGED SILVICULTURAL SYSTEM is a planned sequence of treatments for tending, harvesting and re-establishing a stand designed to maintain trees composed of a single age class in which the range of tree ages is usually 20% of rotation. This system creates a mosaic of single age class stands across the forestlands suitable for producing forest products, where collectively, on the suitable forest land, all aged classes are present and maintained. When the stand reaches the desired product objective, usually expressed as the rotation (the time frame for growing the product objective for a given set of environmental conditions), but may also be expressed as specific wood product(s). Harvesting is scheduled to remove all or most all of the merchantable trees (from which the desired wood products can be produced) in a stand. Whether all or some of the merchantable trees are harvested is dependent upon the regeneration method chosen to accomplish the management prescription objectives. Regeneration, designed to replace desirable tree species, takes place within 5 years after the final harvest.

The TWO-AGED SILVICULTURAL SYSTEM is a planned sequence of treatments for tending, harvesting and re-establishing a stand and maintaining trees of two distinct age classes. The trees in each distinct age class could have tree ages that span up to 20% of the rotation. This system creates a mosaic of two-age class stands across the forestlands suitable for timber production, where collectively, on the suitable forest land, all aged classes are present and maintained. When one age class of the stand reaches the desired product objective, usually expressed as a rotation, harvesting is scheduled to remove that age class, usually the older age class. In a stand, all merchantable trees (from which wood products can be produced) in the older age class are scheduled for harvest. The resulting stand may be two-aged or tend toward an uneven-aged condition as a consequence of both an extended period of regeneration established and the retention of reserve (green) trees that may represent older age classes. When trees in one of the age classes have reached the desired product objective or rotation, that part of the stand is harvested. This harvest regenerates a new age class of desirable tree species to perpetuate the two-aged stand structure within 5 years of the removal of an age class.

The UNEVEN-AGED SILVICULTURAL SYSTEM is a planned sequence of treatments for tending, harvesting and re-establishing a stand and maintaining trees in three or more age classes. Because this system creates a multi-aged stand structure, rotations are not applicable as a management tool. Instead, periodic inventories of the multi-aged stands provide information about the site's productivity, the species present, their size and growth. From this inventory information, product objectives can be determined, as well as the period of time it takes to grow a marketable volume on a sustainable basis. This time frame is used to determine a cutting cycle for producing periodic yields of desired wood products. Additionally, the periodic inventory provides information about the distribution of age classes in the uneven-aged stand. This distribution information is used to plan needed stand improvement practices that adjust the number of trees in each age class to a desired distribution, thus permitting the sustainable production of the product objective. Trees selected for harvest can be dispersed individual trees (i.e., single tree selection) or small groups of trees (i.e., group selection). The system generally maintains a continuous

high forest cover across the land while providing a sustained yield of forest products and the orderly growth and development of desired trees with a variety of diameter and ages.

BASIS FOR ALLOCATION OF SILVICULTURAL SYSTEMS

The selection of which silvicultural system and regeneration method to use is based on the existing forest/stand's condition and the desired condition of the management prescription of which the stand is a part.

During the period from about 1880 through 1930, much of the lands now managed as the Jefferson National Forest were logged and sometimes burned or badly eroded. Some of the Forest was created from abandoned farmland. Today, these lands have healed and been rejuvenated as a result of Federal investment in tree planting, fire suppression, timber stand improvement, and time. The resultant growth of predominately upland oak, cove hardwood, white pine-hemlock, and southern yellow pine forests consist of essentially even-aged stands. Since becoming National Forest System lands, some stands have been managed for wood production.

The National Forest Management Act and its Federal Regulations require the identifying of forest lands to be used for producing sustainable yields of wood products, thus the need to identify (1) which lands and (2) which silvicultural systems are to be used. Although conceptually possible, the random application of mixing uneven-aged, two-aged and even-aged stands is not practical over the present predominately even-aged forest. Even though the production of wood products is an objective, equally important objectives are wildlife habitats, water quality and aesthetics. Even-aged, two-aged and uneven-aged management practices each create different vegetation conditions and stand structures, and have different practices and objectives which have limitations when protecting the forest resources is of primary concern. Likewise each species of tree has unique requirements insofar as light levels, site productivity, and soil moisture in order to regenerate adequately and grow to maturity. Thus, the silvicultural system chosen must also consider the needs of the desirable tree species occupying the site or the species we wish to regenerate. This Revised Plan operates under the principle of management areas and management prescriptions, where portions of the Forest have similar environmental conditions, management emphasis and/or specific multiple resource objectives. Therefore, uneven-aged, two-aged and even-aged silvicultural system's practices will not be applied individually to intersperse the silvicultural systems, but rather to portions of Management Prescriptions where they simultaneously contribute to accomplishing other renewable resource objectives and are appropriate for the desirable tree species to be regenerated or tended.

The initial uneven-aged silvicultural system screening criteria included areas of tentatively suitable forest land that had:

- at least a stand of 100 acres to provide a sufficient total volume harvested in any single entry to allow for an economically viable sale
- slopes from 0% to 30% to minimize the potential damage to the soil and water resource due to the greater number of temporary roads, skid roads, and skid trails required to implement uneven-aged management, as well as to facilitate the economic viability of the timber sale; and
- existing system roads in place for the same reasons identified above.

Uneven-aged regeneration methods are also allowed on lands that do not meet the above criteria when site-specific project objectives include canopy gap creation, scenic enhancement, or restoration/enhancement of old growth forest conditions. Note that frequent entries to maintain an uneven-aged condition in these situations may not be practical due to physical and/or economic limitations.

VEGETATION MANAGEMENT PRACTICES

BASIS FOR ALLOCATION OF SILVICULTURAL SYSTEMS

Management Prescriptions that met the criteria established for using the uneven-aged silvicultural system as discussed above include portions of Management Prescriptions 4, 6, 7, 8, 9, and 11 (refer to the Standards pertaining to each Management Prescription to identify the specific areas). The uneven-aged silvicultural system may be used to achieve the desired future conditions in these Management Prescriptions. Other Management Prescriptions were considered, but not selected, because the uneven-aged silvicultural system would not or was less effective in achieving the desired condition.

For management areas that specify using uneven-aged silvicultural system for a given vegetation community, frequent entries are planned into the same area, usually 5-20 year cutting cycles (cutting cycle lengths are a function site productivity for the desired species). Since, on a given harvest entry, only a small portion of a stand's tree density is harvested, the cutting cycles generally result in lower per acre volumes and possible lower total volume, thus reducing the total stumpage value for the harvested products (timber sale revenues are returned to the U.S. Treasury). Rubber-tired skidders are the predominant equipment used on the NFS lands and are capable of skidding the longer distances necessary with the lower marked volume and value removed per acre as compared to even-aged and two-aged silvicultural systems. The repeated exposure of mineral soil every 5 to 20 years as the skid trails are reused is a concern. However, with limiting uneven-aged silvicultural systems to terrain under 20%, a more dispersed skidding pattern can be prescribed, avoiding much of the exposure of mineral soil than would occur on steeper terrain over 20% slope. The visual impact of the bladed skid trails on the ground would be less on the gentler slopes.

In a given entry, the uneven-aged silvicultural system removes a small number of stand's total trees. On slopes over 20%, the maneuverability of a rubber-tired skidder is reduced. This reduced maneuverability—where unmarked trees are to be left undamaged—greatly increases the physical damage to those trees. On gentle slopes, equipment mobility is less restricted, thus less damage occurs to residual trees. Additionally, the less damage means less agents that cause rot being introduced through bole damage, resulting in reduced future yields and value from the stand.

The uneven-aged silvicultural system requires road access over a larger area than even-aged management to harvest an equal volume during each entry. These roads have to be constructed (where existing access is lacking) at the first entry and then reopened during each subsequent entry at a 5 to 20 year cutting cycle. Selecting areas where most of the roads are already in place reduces the need for new roads. In most cases where access exists, only dispersed skid trails and some landings are needed.

The final criterion was to provide an efficient means of regulating a sustained yield of forest products from areas where uneven-aged silvicultural system would be applied. This meant determining where land meeting the other criteria could be consolidated into large, contiguous areas. Even with the 100-acre minimum size constraint, the analysis revealed a large number of interspersed potential areas throughout the Forest. When the smaller scattered parcels were eliminated, the remaining lands could be allocated to several large, contiguous areas of the Forest, thereby providing for the application of cost effective uneven-aged silvicultural system.

On all other suitable land, where uneven-aged silvicultural system criteria are not applicable, two-aged and even-aged silvicultural system become the viable silvicultural systems.

REGENERATION METHODS AND STAND IMPROVEMENT PRACTICES

Regeneration methods are the practice by which forest stands of desirable species are established at an adequate stocking level so that they may be sustained for a specific purpose(s), be it the production of wood products, the production of specific habitat for viable wildlife populations, or a combination of both. Depending on the management area emphasis and desired condition, the selected silvicultural system and regeneration method will result in a uneven-aged stand (used to achieve uneven-aged forest conditions), a two-aged stand (used to achieve 2 distinct age classes), or an even-aged stand (used to achieve even-aged forest conditions). Silvicultural systems are a means of manipulating vegetation to help achieve a Management Prescription's desired condition.

Table D-4. Silvicultural Regeneration Methods within Each of Three Silvicultural Systems

EVEN-AGED stands	TWO-AGED stands	UNEVEN-AGED stands
Regeneration Method:	Regeneration Method:	Regeneration Method:
1. clearcutting	1. clearcutting with reserves	1. group selection
2. seed tree	2. coppice with reserves	2. single tree selection
3. shelterwood	3. seed tree with reserves	
	4. shelterwood with reserves	
Stand Improvement practices:	Stand Improvement practices:	Stand Improvement practices:
1. thinning	1. thinning	1. thinning
2. release & weeding	2. release & weeding	2. release & weeding
3. prescribed burning	3. prescribed burning	3. prescribed burning
4. improvement cutting	4. improvement cutting	4. improvement cutting
5. salvage cutting	5. salvage cutting	5. salvage cutting
6. sanitation cutting	6. sanitation cutting	6. sanitation cutting

The Information contained in the following two references provides the scientific explanation for applying silvicultural systems for vegetation manipulation of the forest types on the Jefferson National Forest.

The Scientific Basis for Silvicultural and Management Decisions in the National Forest System. Russell M. Bums, General Technical Report WO-55, September 1989.

- Silviculture of Northeastern Hardwoods, The Pine Group, pg 21-22, the White Pine forest cover type and the Eastern Hemlock forest cover type
- Silviculture of Southern Pines, Oak-Pine types, pg 34-35
- Silviculture of Eastern Hardwoods, pg 9-17

Silvicultural Systems for the Major Forest Types of the United States. Russell M. Burns, Agriculture Handbook #445-19M.

- Oak-Hickory, pg 116-120 and pg 141-144 (Appalachian Mixed Hardwood)
- Northern Hardwoods, pg 121-127
- Pitch Pine, pg 135-136
- Virginia Pine, pg 167-169
- Eastern White Pine including Eastern Hemlock, pg 131-134
- Oak-Pine, pg 172-174
- Yellow Poplar, pg 180-182

The specific portions of the above listed publications are included by reference and should be read in conjunction with this appendix to provide comprehensive analysis of vegetation practices applicable to appropriate management areas that allow vegetative manipulation.

Table D-5. Relationship of Community Type and Major Forest Community Type as analyzed in the Revised Jefferson National Forest Land and Resource Management Plan and associated Environmental Impact Statement and Eastern Forest Cover Type as presented in the Silvicultural Systems for the Major Forest Types of the United States

Forest Community Type [1]	Major Forest Communities [2]	Eastern Forest Cover Type [3]	Forest Types from the Continuous Inventory of Stand Conditions (CISC) database
Northern Hardwood Forest	Mesic Deciduous	Northern Hardwoods	Sugar maple-Beech-Yellow birch (CISC 81)
Conifer-Northern Hardwood Forest	Eastern Hemlock and White Pine	Eastern White Pine including Eastern Hemlock	White pine (CISC 3) White pine-Hemlock (CISC 4) Hemlock (CISC 5) Hemlock-Hardwood (CISC 8) White pine-Cove hardwood (CISC 9) White pine-Upland hardwoods (CISC 10)
Mixed Mesophytic Forest	Mesic Deciduous	Appalachian Mixed Hardwoods & Yellow Poplar	Cove hardwood-White pine-Hemlock (CISC 41) Yellow poplar (CISC 50) Yellow polar-White oak-Red oak (CISC 56) Black walnut (CISC 82)
River Floodplain and Eastern Riverfront Forest	Mesic Deciduous	Bottomland Hardwoods	Sweetgum-Yellow poplar (CISC 58) River birch-Sycamore (CISC 72) Cottonwood (CISC 73) Sugarberry-American elm-Green ash (CISC 63) Beech-Magnolia (CISC 69) Willow (CISC 74) Sycamore-Pecan-American elm (CISC 75)
Dry-Mesic Oak Forest	Oak and Oak Pine	Oak - Hickory	Post oak-Black oak (CISC 51) White oak-Red oak-Hickory (CISC 53) White oak (CISC 54) Northern red oak-Hickory (CISC 55)
Dry and Xeric Oak Forest; Woodland and Savanna	Oak and Oak Pine	Oak - Hickory	Chestnut oak (CISC 52) Scrub oaks (CISC 57) Scarlet oak (CISC 59) Chestnut oak-Scarlet oak (CISC 60)
Xeric Pine & Pine-oak Forest & Woodland	Pine and Pine Oak	Eastern Red Cedar & Pitch Pine & Longleaf Pine & Shortleaf Pine & Virginia Pine	Eastern redcedar-Hardwoods (CISC 11) Shortleaf pine-oaks (CISC 12) Pitch pine-oaks (CISC 15) Virginia pine-oaks (CISC 16) Table Mountain pine-Hardwoods (CISC 20) Longleaf pine (CISC 21) Virginia pine (CISC 33) Pitch pine (CISC 38) Table Mountain pine (CISC 39) Eastern red cedar (CISC 35) Black locust (CISC 88)
Dry and Dry-Mesic Oak-Pine Forest	Oak and Oak Pine	Oak - Pine	Upland hardwoods-Yellow pine (CISC 42) Oaks-Eastern red cedar (CISC 43) Southern red oak-Yellow pine (CISC 44) Chestnut oak-Scarlet oak-Yellow pine (CISC 45) Bottomland hardwoods-Yellow pine (CISC 46) White oak-Black oak-Yellow pine (CISC 47) Northern red oak-Hickory-Yellow pine (CISC 48)
Montane Spruce-fir Forest	High-Elevation Spruce Fir	Eastern Spruce - Fir	Fraser fir (CISC 6) Red spruce-Fraser fir (CISC 7) Red spruce-Northern hardwood (CISC 17)

[1] - per *Guidance for Conserving and Restoring Old Growth Forest Communitites on National Forests in the Southern Region.*
[2] - per *Chapter 3 of the Jefferson National Forest Land and Resource Management Plan Draft Environmental Impact Statement.*
[3] - per *Silvicultural Systems for the Major Forest Types of the United States.*

Table D-6 summarizes the range of feasible applications of silvicultural regeneration methods that can be used to manipulate vegetation on land suitable for timber production in the Forest Community Types on the Jefferson National Forest. Any of the following methods can be applied to manipulate vegetation when based on site specific project analysis and disclosure in an environmental analysis document.

Community Type	Even-aged Silvicultural System			Uneven-aged Silvicultural System	
	Clearcut	Seed Tree	Shelterwood	Group Selection	Single tree Selection
Northern Hardwood Forest	RC	NR	RC	RC	RC
Conifer-Northern Hardwood Forest (White Pine Forest Types)	RC	NR	R	P	P
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	NR	NR	RC	P	R
Mixed Mesophytic Forest	R	NR	RC	P	NR
River Floodplain and Eastern Riverfront Forest	R	NR	RC	P	NR
Dry-Mesic Oak Forest	R	NR	RC	P	NR
Dry and Xeric Oak Forest; Woodland and Savanna	R	NR	RC	P	NR
Xeric Pine & Pine-oak Forest & Woodland	R	RC	NR	NR	NR
Dry and Dry-Mesic Oak-Pine Forest	RC	RC	RC	P	NR
Montane Spruce-fir Forest	NR	NR	RC	P	R

Community Type	Two-aged Silvicultural System			
	Clearcut w/ Reserves	Seed Tree w/ Reserves	Coppice w/ Reserves	Shelterwood w/ Reserves
Northern Hardwood Forest	R	NR	RC	RC
Conifer-Northern Hardwood Forest (White Pine Forest Types)	RC	NR	NR	R
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	NR	NR	NR	RC
Mixed Mesophytic Forest	R	NR	R	RC
River Floodplain and Eastern Riverfront Forest	R	NR	R	RC
Dry-Mesic Oak Forest	R	NR	R	RC
Dry and Xeric Oak Forest; Woodland and Savanna	R	NR	R	RC
Xeric Pine & Pine-oak Forest & Woodland	RC	RC	NR	NR
Dry and Dry-Mesic Oak-Pine Forest	RC	RC	RC	RC
Montane Spruce-fir Forest	NR	NR	NR	RC

Codes Used in Table D-6: Range of Regeneration Methods
- R = recommended
- RC = recommended with conditions
- P = possible
- NR = not recommended

RECOMMENDED (R) means that the silvicultural regeneration method has been reliable in creating conditions favorable for establishing regeneration of the desired species and to maintain growth of the desirable species using natural regeneration site preparation treatments.

RECOMMENDED WITH CONDITIONS (RC) means that for the silvicultural regeneration method to be reliable, some specific condition must either exist prior to cutting, some limits will apply to the regenerated species, or some special treatment is needed after cutting to obtain and maintain desirable species.

POSSIBLE (P) means the silvicultural practice is not reliable in creating conditions favorable for regenerating the desired species, unless significant alteration of the species composition, growth or sustainability is acceptable. For example, using single tree selection in the Oak-Hickory type will not perpetuate oaks or other intolerant species in the same proportion as currently exists in the even-aged forest stands of the Forest.

If the loss of oaks and the shift to a forest of more shade tolerant species is compatible with the Desired Future Condition of any management area, then single tree selection is a possible silvicultural practice.

NOT RECOMMENDED (NR) means the silvicultural system is not reliable in creating conditions favorable for establishing desired regeneration and to maintain growth of the desirable species using standard or special treatments.

Justification For Codes Selected In Silvicultural Practices Table

The following summarizes the information presented in the two cited references.

- For NR- not recommended, the reason for not recommending the method of cut.
- For RC- recommended with conditions, the specific condition necessary that allows the method of cut to be recommended.
- For P- possible, the likely alteration in species composition, growth or sustainability if the method of cut is applied.

Tables D-7 through D-14 display the justification for the range of silvicultural regeneration methods disclosed in Table D-6.

Table D-7. Even Aged Silvicultural System Justification for Not Recommended (NR)

Community Type	Regeneration Method	Reason For Not Recommending
Northern Hardwood Forest	Seed Tree	Natural seeding ability produces sufficient seedlings for adequate advance reproduction; density of seed trees is not sufficient to affect proportion of tolerant/intolerant species. Risk of windthrow of residual stems.
Conifer-Northern Hardwood Forest (White Pine Forest Types)	Seed Tree	Good seed crops only occur infrequently on a 3-10 year cycle; remaining trees subject to windthrow.
Conifer-Northern Hardwood Forest	Clearcut	Too much sunlight and dry conditions for seedling development;
	Seed Tree	Density of seed trees is not sufficient to affect proportion of tolerant/intolerant species. Risk of windthrow of residual stems.
Mixed Mesophytic Forest	Seed Tree	Plentiful seed Is present on the site or will be blown in from adjacent stands. Risk of windthrow.
River Floodplain and Eastern Riverfront Forest	Seed Tree	Plentiful seed Is present on the site or will be blown in from adjacent stands. Risk of windthrow.
Dry-Mesic Oak Forest	Seed Tree	Heavy seed is poorly distributed and slow growing seedlings are not able to compete with other vegetation; light seeded species have abundant seed on the site or available nearby.
Dry and Xeric Oak Forest; Woodland and Savanna	Seed Tree	Heavy seed is poorly distributed and slow growing seedlings are not able to compete with other vegetation; light seeded species have abundant seed on the site or available nearby.
Xeric Pine & Pine-oak Forest & Woodland	Shelterwood	Does not provide sufficient sunlight to reach forest floor for seed germination and seedling development.
Montane Spruce-fir Forest	Seed Tree	Too much sunlight and dry conditions for seedling development. Risk of windthrow.
	Clearcut	Too much sunlight and dry conditions for seedling development.

Table D-8. Even Aged Silvicultural System Justification for Recommended with Conditions (RC)

Community Type	Regeneration Method	Conditions for Recommendation
Northern Hardwood Forest	Clearcut	Size of harvest unit will control proportion of tolerant and intolerant species that regenerate; pre-commercial treatments are needed to achieve the desired species composition.
	Shelterwood	Adequate advanced regeneration is not established.
Conifer-Northern Hardwood Forest (White Pine Forest Types)	Clearcut	Sufficient white pine advanced reproduction exists in the understory.
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	Shelterwood	Have old stands and/or drier site, lacking sufficient hemlock advanced reproduction; two or three cuts may be required.
Mixed Mesophytic Forest	Shelterwood	Will remove overstory within five years to prevent severe reduction in height and diameter growth.
River Floodplain and Eastern Riverfront Forest	Shelterwood	Will remove overstory within five years to prevent severe reduction in height and diameter growth.
Dry-Mesic Oak Forest	Shelterwood	Adequate advanced regeneration is not established.
Dry and Xeric Oak Forest; Woodland and Savanna	Shelterwood	Adequate advanced regeneration is not established.
Xeric Pine & Pine-oak Forest & Woodland	Seed Tree	When non-serotinous cones are present.
Dry and Dry-Mesic Oak-Pine Forest	Clearcut	Have to use intensive control of hardwood competition after harvest to maintain a pine component.
	Seed Tree	Have to use intensive control of hardwood competition after harvest to maintain a pine component.
	Shelterwood	Have to use intensive control of hardwood competition after harvest to maintain a pine component.
Montane Spruce-fir Forest	Shelterwood	Adequate advanced regeneration is not established.

Table D-9. Two-Aged Silvicultural System Justification for Not Recommended (NR)

Community Type	Regeneration Method	Reason For Not Recommending
Northern Hardwood Forest	Seed Tree w/ Reserves	Natural seeding ability produces sufficient seedlings for adequate advance reproduction; density of reserve trees is not sufficient to affect proportion of tolerant / intolerant species. Risk of windthrow of residual stems.
Conifer-Northern Hardwood Forest (White Pine Forest Types)	Seed Tree w/ Reserves	Good seed crops only occur infrequently on a 3-10 year cycle; reserve trees subject to windfall.
	Coppice w/ Reserves	Pines rarely if ever stump-sprout.
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	Clearcut w/ Reserves	Too much sunlight and dry conditions for seedling development; reserve trees do not provide enough shade.
	Seed Tree w/ Reserves	Too much sunlight and dry conditions for seedling development; reserve trees do not provide enough shade.
	Coppice w/ Reserves	Too much sunlight and dry conditions for seedling development; reserve trees do not provide enough shade. Conifers rarely, if ever, sprout.
Mixed Mesophytic Forest	Seed Tree w/ Reserves	Plentiful seed Is present on the site or will be blown in from adjacent stands. Risk of windthrow.
River Floodplain and Eastern Riverfront Forest	Seed Tree w/ Reserves	Plentiful seed Is present on the site or will be blown in from adjacent stands. Risk of windthrow.
Dry-Mesic Oak Forest	Seed Tree w/ Reserves	Heavy seed is poorly distributed and slow growing seedlings are not able to compete with other vegetation; light seeded species have abundant seed on the site or available nearby.
Dry and Xeric Oak Forest; Woodland and Savanna	Seed Tree w/ Reserves	Heavy seed is poorly distributed and slow growing seedlings are not able to compete with other vegetation; light seeded species have abundant seed on the site or available nearby.
Xeric Pine & Pine-oak Forest & Woodland	Shelterwood w/ Reserves	Does not provide sufficient sunlight to reach forest floor for seed germination, seedling development, and sapling growth.
	Coppice w/ Reserves	Pines rarely if ever stump-sprout.
Montane Spruce-fir Forest	Seed Tree w/ Reserves	Too much sunlight and dry conditions for seedling development. Risk of windthrow.
	Coppice w/ Reserves	Conifers rarely if ever stump-sprout.
	Clearcut w/ Reserves	Too much sunlight and dry conditions for seedling development.

Table D-10. Two-Aged Silvicultural System Justification for Recommended with Conditions (RC)

Community Type	Regeneration Method	Conditions for Recommendation
Northern Hardwood Forest	Coppice w/ Reserves	Size of harvest unit will control proportion of tolerant and intolerant species that regenerate; pre-commercial treatments are needed to achieve the desired species composition.
	Shelterwood w/ Reserves	Adequate advanced reproduction is lacking.
Conifer-Northern Hardwood Forest (White Pine Forest Types)	Clearcut w/ Reserves	Adequate advanced reproduction is present.
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	Shelterwood w/ Reserves	Have old stands and/or drier site, lacking sufficient hemlock advanced reproduction; two or three cuts may be required.
Mixed Mesophytic Forest	Shelterwood w/ Reserves	Will remove overstory within five years to prevent severe reduction in height and diameter growth.
River Floodplain and Eastern Riverfront Forest	Shelterwood w/ Reserves	Will remove overstory within five years to prevent severe reduction in height and diameter growth.
Dry-Mesic Oak Forest	Shelterwood w/ Reserves	Adequate advanced reproduction is present.
Dry and Xeric Oak Forest; Woodland and Savanna	Shelterwood w/ Reserves	Adequate advanced reproduction is present.
Xeric Pine & Pine-oak Forest & Woodland	Clearcut w/ Reserves	When non-serotinous cones are present.
	Seed Tree w/ Reserves	When non-serotinous cones are present.
Dry and Dry-Mesic Oak-Pine Forest	Clearcut w/ Reserves	Have to use intensive control of hardwood competition after harvest to maintain a pine component
	Seed Tree w/ Reserves	Have to use intensive control of hardwood competition after harvest to maintain a pine component
	Coppice w/ Reserves	Have to use intensive control of hardwood competition after harvest to maintain a pine component
	Shelterwood w/ Reserves	Have to use intensive control of hardwood competition after harvest to maintain a pine component
Montane Spruce-fir Forest	Shelterwood w/ Reserves	Adequate advanced regeneration is not established.

Table D-11. Uneven-Aged Silvicultural System Justification for Not Recommended (NR)

Community Type	Regeneration Method	Reason For Not Recommending
Mixed Mesophytic Forest	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.
River Floodplain and Eastern Riverfront Forest	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.
Dry-Mesic Oak Forest	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.
Dry and Xeric Oak Forest; Woodland and Savanna	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.
Xeric Pine & Pine-oak Forest & Woodland	Group Selection	Shade intolerant species will not develop satisfactorily, even small openings create too much shade.
	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.
Dry and Dry-Mesic Oak-Pine Forest	Single Tree Selection	Shade intolerant species will not develop satisfactorily under fully stocked stand.

Table D-12. Uneven-Aged Silvicultural System Justification for Recommended with Conditions (RC)

Community Type	Regeneration Method	Conditions for Recommendation
Northern Hardwood Forest	Group Selection	Desirable species are less shade tolerant species and larger openings are required.
	Single Tree Selection	Desirable species are shade tolerant species.

Table D-13. Uneven-Aged Silvicultural System Justification for Possible (P)

Community Type	Regeneration Method	Conditions for Recommendation
Conifer-Northern Hardwood Forest (White Pine Forest Types)	Group Selection	Species composition will shift to more moderate shade tolerant species.
	Single Tree Selection	Species composition will shift to exclusively shade tolerant species.
Conifer-Northern Hardwood Forest (Eastern Hemlock Forest Types)	Group Selection	Species composition will shift to more moderate shade tolerant species, hemlock would be outcompeted.
Mixed Mesophytic Forest	Group Selection	Species composition will shift to more shade tolerant species, yellow poplar would be lost.
River Floodplain and Eastern Riverfront Forest	Group Selection	Species composition will shift to more shade tolerant species.
Dry-Mesic Oak Forest	Group Selection	Species composition will shift to more shade tolerant species, oak species would be reduced.
Dry and Xeric Oak Forest; Woodland and Savanna	Group Selection	Species composition will shift to more shade tolerant species, oak species would be reduced.
Dry and Dry-Mesic Oak-Pine Forest	Group Selection	Species composition will shift to more shade tolerant species, oak and yellow pine pine species would be reduced.
Montane Spruce-fir Forest	Group Selection	Species composition will shift to moderate shade tolerant species, spruce and fir may be outcompeted.

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
10, 11		1	Trends in the numbers, locations, abundance and conditions of rare community occurrences by type	1	Annually schedule site visits to map and track locations, composition and condition of selected sample of rare communities utilizing standard GIS coverage and NRIS Terra, FSVeg and Fauna databases. Utilize standard reports for Annual M&E reporting. Use the assigned values to determine cave classification and to determine cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1988.	5 Year Intervals	Moderate	Forest Ecologist or Botanist
10, 11		1	Acres and/or number of occurrences of rare communities treated to maintain or restore desired conditions	2	Track annual accomplishments with standard tracking systems and compare with changing occurrences and conditions as determined in task #1	Annual	Moderate/ High	Forest Botanist
12	12.01, 12.02, 12.03, 12.04, 12.05	2	Status and trend in forest cover acreage by major forest and woodland community type and successional stage	3	Map and update changes through annual routine inventories. Monitor acres by major forest and woodland community type and trends?	5 Year Intervals	Moderate	Forest Silviculturist
12	12.01, 12.02, 12.03, 12.04, 12.05	2	Acres of silvilcultural treatments implemented by activity type and forest type	4	Summarize acres of treatments by major community type utilizing established activity tracking systems.	Annual	Moderate	Forest Silviculturist
17	17.01, 17.02, 17.03	2	Acres burned (wildland and prescribed fire) by forest type and season of burn compared to desired fire regimes	5	Acres burned (wildland and prescribed) by major forest community type. Maps of prescribed burn units are incorporated into the GIS data base annually, by the end of the burning season. Total acres are determined from a GIS query.	Annual	Moderate	Forest Ecologist
6, 12	12.01, 12.02, 12.03, 12.04, 12.05	2	Trends in MIS populations in relationship to the to major forest community/condition MIS was selected to indicate. (See Tables 5-1 in Chapter 5).	6	Annual Breeding Bird Survey occurrence trends for selected MIS compared to status and trends in forest cover acerage in Task #3.	5 Year Intervals	Moderate	Forest Ecology Group

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
6, 12	12.01, 12.02, 12.03, 12.04, 12.05	3	Trends in early, mid-, and late-successional forests by prescription group	7	Map and update changes through annual routine inventories. Monitor acres by successional stage and trend.	5 Year Intervals	Moderate	Forest Silviculturist
6, 7	7.02	3	How many acres of high-elevation early-successional habitats exist and what are the trends in their abundance and condition	8	Map and update changes through periodic routine inventories. Monitor acres and trends.	5 Year Intervals	Moderate	Forest Silviculturist
6		3	Trends in MIS populations in relationship to the successional stage habitat condition MIS was selected to indicate. (See Tables 5-2 in Chapter 5).	9	Annual Breeding Bird Survey occurrence trends for selected MIS compared to successional stage habitat trends in Task #8.	5 Year Intervals	Moderate	Forest Ecology Group
6, 7, 8	7.01, 8.01	3	Trend in the abundance and distribution of landscapes important for forest interior birds	10	Rerun IMI analysis periodically or as needed	10 Year Intervals	Moderate	Forest Biologist
12	12.01	3	Acreage of existing and potential old growth by forest community class	11	Rerun IMI and CISC analysis periodically or as needed	5 Year Intervals	Moderate	Forest Silviculturist
6	12.05	4	Trends in hard mast production capability	12	Map and update changes in forest composition and condition through annual routine inventories. Infer mast production capability from the status of older age classes of oak forest community types	5 Year Intervals	Moderate	Forest Silviculturist
6	12.01, 12.02, 12.03, 12.04, 12.05	4	Trends in MIS populations in relationship to the terrestrial habitat attributes MIS was selected to indicate. (See Tables 5-3 in Chapter 5).	13	Annual Breeding Bird Survey occurrence trends for Pileated woodpeckers compared to snag abundance as indicated by trends in late-successional forest communities. See Task #14.	Annual	Moderate	Forest Ecology Group
6, 12, 14	12.01, 12.02, 12.03, 12.04, 12.05, 14.01, 14.02	4	Abundance of snags and downed wood	14	Map and update changes in forest successional conditions and area impacted by insect and disease through routine annual inventories. Infer snag and downed wood by the acres of late-successional stage forests and mortality due to insects and disease	Annual	Moderate	Forest Silviculturist

Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
2, 6, 12	12.01, 12.03, 12.05	4	Trend in riparian area acreage by forest type and successional stage	15	Map and update changes in riparian areas, forest community type and successional conditions through periodice routine inventories.	5 Year Intervals	Moderate	Forest Silviculturist
2, 6, 12	12.01, 12.03, 12.05	4	Acres of vegetation management implemented in riparian areas by activity type	16	Track annual accomplishments with standard tracking system	Annual	Moderate	Forest Silviculturist
2, 3, 5	2.01, 3.01, 3.02, 5.01	5	Conditions and trends in the overall health of streams including trends in water quality parameters and physical habitat conditions in relationship to aquatic communities	17	Water quality sampling, emphasis on nitrogen, sulfur, and mercury compounds. Aquatic macroinvertebrate sampling (EPA's Rapid Bioassessment Protocol II (EPA 1989) with modifications by Smith & Voshell (1997)). Systematic stream fish community inventories, stream stability, streambed structure and large woody debris as appropriate. Sample selected streams on a periodic basis and use fixed sampling points - coordinate	Annual	High to Moderate	Forest Ecology Group
3, 5	5.01	5	Trends in presence and abundance of wild trout in relation to acidification of stream systems and the application of mitigating measures.	18	Sample selected streams on a periodic basis for wild trout and pH in high elevation streams using systematic stream fish community inventories.	As Available	High	Forest Aquatic Biologist
5	5.01	6	Trends in air pollution effects on forest soil and vegetation.	19	Complete assessment of watersheds at risk from acid deposition. Sample soil water and vegetation in high risk areas.	As Available	High to Moderate	Forest Ecology Group & Silviculturist
5	5.01	6	Trends in air pollutants (ozone, fine particulates, and acid deposition).	20	Summarize air quality monitoring data from sites on or near the Forest, especially acid deposition and ozone.	Annually	High to Moderate	Zone Air Specialist

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
12, 18	18.04	6	Conditions and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment	21	Fuel monitoring following Regional protocol. Acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment mapped into the GIS data base reports generated through GIS/ NRIS FSVeg queries.	Annual	Moderate	Forest Fire Management Group
19	19.01	6	Coordinate with State & local air quality agencies to track emissions from NF lands for compliance with NAAQS, with emphasis on PM2.5 emissions from prescribed fires. Ensure NF prescribed fire emissions are considered when they fall within PM2.5 non-attainment areas. [36 CFR 219.27(a)(12)]	22	Monitor fine particulate from a select portion of prescribed fires using filter or optical based monitors.	Annual	High	Zone Air Specialist & Fire Managers
14	14.01, 14.02	6	What are the trends in insect and disease effects? [36 CFR 219(k)(5)(iv), 36 CFR 219.20(b)]	23	Map and update trends in insect and disease outbreaks and epidemics using routine inventory methods as part of Forest Health Monitoring Program.	Annual	High	Forest Health Program
12	12.01, 12.02, 12.03, 12.04, 12.05	6	What are the trends in forest composition and condition that have been associated with these insects and diseases? Are planned measures to control destructive insects and disease being achieved? [36 CFR 219.12(k)5 (iv)]	24	Task #22 in relation to Task #3.	5 Year Intervals	Moderate	Forest Health Program
3	3.02	7	Population status of Blackside dace and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	25	Follow recovery plan	Annual	Moderate	Forest Aquatic Biologist
3	3.02	7	Population status of James River spiny mussel and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	26	Follow recovery plan	Annual	Moderate	Forest Aquatic Biologist
9	9.01	7	Population status of Northern flying squirrel and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	27	Follow recovery plan	Annual	Moderate	Forest Biologist

Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
9	9.02	7	Population status of Indiana bat and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	28	Follow recovery plan and protocols of Indiana bat Recovery Team. Biennial surveys of all Indiana bat hibernacula. Yearly surveys for 3 years on newly gated hibernacula, then biennial.	2 Year Intervals	Moderate	Forest Ecologist
9	9.04	7	Population status of northeastern bulrush and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	29	Follow recovery plan	Annual	High	Forest Botanist
9	9.04	7	Population status of Virginia spirea and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	30	Follow recovery plan	Annual	High	Forest Botanist
9	9.04	7	Population status of small-whorled pogonia and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	31	Follow recovery plan	Annual	High	Forest Botanist
9	9.05	7	Population status of Virginia round-leaf birch and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	32	Follow recovery plan	Annual	High	Forest Botanist
9	9.03	7	Population trends in Peaks of Otter Salamander as an indicator of effectiveness of management on conservation of the species [MIS - 36 CFR 219.19(a)(6)]	33	Follow Conservation Plan	5 Year Intervals	Moderate	Forest Ecology Group
7	7.01	7	Presence/absence of cerulean warblers in suitable habitats.	34	Using standardized survey methods (CEWAP) determine presence/absence of cerulean warbler in optimal habitats. If present, determine habitat relationships.	5 Year Intervals	High	Forest Ecology Group
7	7.02	7	Presence/absence of golden-winged warblers in suitable habitats.	35	Standardized surveys for Golden-winged warblers using transects and playback in high-elevation early-successional habitats. Habitat characterized at occupied sites.	5 Year Intervals	High	Forest Ecology Group
6		7	Trends in recovery of T&E species, and status and distribution of some viability concern species that are not specifically identified under other elements. Species targeted under this element will be determined through periodic review of each species' status and conservation priority. [36 CFR 219.19 (a)(7)]	36	Various methods will be used as appropriate to the species or species group to monitor status, trends and distribution (refer to the PETS Inventory and Monitoring Handbook)	As Available	Moderate	Forest Ecology Group

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
6		7	Trends in harvest data for demand MIS in relationship to habitat improvement activities for those animals? [MIS - 36 CFR 219.19(a)(6)]. (See Table 5-6 in Chapter 5).	37	Collect harvest data from Cooperating State Agency related to annual accomplishments for habitat improvement tracked with standard tracking systems	5 Year Intervals	High	Forest Biologist
20	20.01, 20.02, 20.03, 20.04	9	Results and trends in user satisfaction ratings [36 CFR 219.21(a)]	38	Analysis of NVUM customer satisfaction data for Day Use, Overnight General Forest Area, and Wilderness programs and local Customer Satisfaction survey tools.	5 Year Intervals	Low/ Moderate	SO-Recreation Staff
20	20.01	9	Are semi-primitive recreation settings and backcountry recreation opportunities maintained or increased?	39	Analysis of road construction, reconstruction, and maintenance activities in relation to semi-primitive (SPNM, SPM, & SP2) ROS settings through review of site-specific projects.	Annual	High	Forest Recreation Staff
20		9	User impacts, conflicts and effects within the AT Corridor	40	Analysis of NVUM data, Customer Satisfaction survey, GIS mapping of shelter sites, trailhead registration data	As needed	Moderate	Forest Recreation Staff
20	20.02, 20.04	9	Are the following recreation opportunities being increased: wildlife/ bird viewing, photography, interpretive opportunities, nature trails, day use and group facilities, water-based facilities, nonmotorized trails, OHV routes, ATV systems, Special Interest Areas?	41	Review of construction, reconstruction, and maintenance of facilities plans and accomplishments. Check of INFRA inventory.	Annual	High	Forest Recreation Staff
20	20.02, 20.03	9	Are motorized and nonmotorized trails being maintained?	42	Analysis of INFRA Deferred Maintenance Report and reporting of per cent change in backlog.	Annual	High	Forest Recreation Staff
21	21.01	10	Is wilderness visitor use within limits that do not impair the values for which the wilderness was established? [36 CFR 219.18(a)]	43	Analyze trends in wilderness visitor use and compile summary report using GIS mapping (number and location of concentrated use areas) and use of visitor satisfaction results using NVUM and wilderness trailhead registration data.	5 Year Intervals	Moderate	Forest Recreation Staff
21	21.03	10	Trends in fire regimes and effects on fire dependent communities in Wilderness	44	Annual summary report of number of Wildland Fire Use Fires and acres and number of management ignited fires and season of burn.	Annual	Moderate	Forest Fire Management Group

Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
22	22.01	10	Trends in air quality related values in Class 1 Wilderness areas [36 CFR 219.27(a)(12)]	45	IMPROVE national aerosol monitoring network, water quality sampling for acid deposition, vegetation sampling for ozone & long-term trends, soil water sampling.	As Available	High to Moderate	Zone Air Specialist & National data analysis
23		11	Are free-flowing conditions and Outstandingly Remarkable Values being protected?	46	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor.	5 Year Intervals	High	Forest Recreation Group
23	23.01	11	Have suitability studies for North Creek and Roaring Branch been completed?	47	5 year review	5 Year Intervals	High	
25	25.01, 25.02	12	Acres of National Forest land that meet or exceed established scenic quality objectives [36 CFR 219.27(c)(6), 36 CFR 219.27(d)(1)]	48	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that meet or exceed the assigned SIO.	Annual	Low/ High	Forest Landscape Architect
26		12	Are landscape character themes changing and why?	49	Annual routine inventory through Scenery Management System. Summary report of acres by landscape character theme.	5 Year Intervals	Low/ High	Forest Landscape Architect
27	27.01	13	Are heritage sites being identified for protection? Are protection measures effective? [36 CFR 219.24(a)(4)]	50	Heritage inventories and surveys pursuant to 106 for all ground disturbing projects are reviewed by SHPO/THPO per Regional PA and Forest MOUs. Sample field condition assessment of sites eligible or listed in National Register. Review of preservation/maintenance plans completed.	Annual	High	Forest Archeologist

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
1	1.01	14	Stream stability in reference watersheds compared to stability of streams in watersheds where projects are occurring	51	Conduct pebble count sampling on a subset sample of projects once per year (September – October or following a major storm event) using procedure described by Kappesser (2002). Utilize Riffle Stability Index, Relative Bed Stability (Kauffman, 1999) and percent finer than 4 millimeters to determine acceptable levels of variability or thresholds of concern. Evaluate project watersheds before, during, and after projects and compare with reference watershed data.	Annual	Moderate/ High	Forest Hydrologist
1	1.01	14	Stream water temperatures in reference watersheds compared to watersheds where projects are occurring (maximums and minimums)	52	Install data loggers in all reference watershed streams and use data from them to compare with data from managed watersheds. Once a year, conduct statistical analysis to evaluate occurrence and significance of differences.	Annual	Moderate/ High	Forest Hydrologist
1	1.01	14	Condition and trend of chemical resilience of watersheds across the Forest as indicated by chemical parameters	53	Water quality sampling protocol	Periodic	Moderate/ High	Forest Hydrologist
4		14	Effect of management activities on soil quality and productivity [36 CFR 219.12 (k)(2), 36 CFR 219.27(a)(1)]	54	Sample projects for soil loss. Actual soil movement may sometimes be determined by techniques such as fabric dams.	Periodic or at random	Moderate/ High	Forest Soil Scientist
4	4.01	14	Are temporary roads being revegetated within 10 years of contract or permit termination? [36 CFR 219.27(a)(11)]	55	Sample projects during program reviews to determine and document that standard is being met.	Annual	Moderate	Forest Soil Scientist and Forest Engineer

Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision/ Reliability	Responsibility
29	29.03	14	Did reclamation of mineral sites occur at the appropriate stage of the mineral operation? Was reclamation effective? Is follow-up needed?	56	Field inspection of project sites following established monitoring protocol. Review of sample of project documents and related NEPA documents for compliance with laws, BMPs and standards. Followup field inspections annually after reclamation operations for five years. Summarize findings and recommend	As Appropriate	High	Forest Geologist
2		15	Are State BMPs and Forest Standards being implemented to protect and maintain soil and water resources? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	57	Field inspection of project sites following established monitoring protocol. Review of sample of project documents and related EAs/EISs for compliance with	Annual	Moderate/ High	Forest Hydrologist and Soil Scientist
2		15	Are Standards (BMPs) Effective minimizing non-point source pollution?	58	Sample project activities related to BMPs to for effectiveness of BMPs and standards. 1) Visual inspection of implemented standards, 2) Measured effects of standards, and/or 3) Aquatic biota inventories.	Periodic or at random	Moderate	Forest Hydrologist and Soil Scientist
2	2.01	15	Are riparian areas or corridors providing necessary shade and cover for aquatic habitats?	59	Stream surveys in selected sample of project areas of shade and cover of aquatic habitats. Measurements taken	Annual	Moderate	Forest Hydrologist or Aquatic Biologist
15, 16	15.01, 16.01, 16.02	16	Are forest products being produced within predicted ranges? [36 CFR 219.27 (c)(2)]	60	Sales Tracking and Reporting System	Annual	High	Forest Timber Management Staff
28	28.02	5	Are livestock management systems and improvements adequately protecting riparian areas and aquatic habitats?	61	Pastures monitored annually for livestock damage.	Annual	High	Forest Soil Scientist
29	29.01, 29.02, 30.02	16	Were mineral authorizations processed in a timely manner?	62	Review of requests received and process time elapsed to decision for energy and nonenergy minerals as well as requests from private mineral	5 Year Intervals	High	Forest Geologist

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Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
32, 33, 35	32.01, 32.02, 32.03, 33.01, 35.01	16	Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies and to provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources. [36 CFR 219.27 (a)(10)]	63	Miles of National Forest System Roads (NFSR) exist compared to miles maintained to their objective maintenance level. Miles of road improved. Routine condition surveys on 25-33% of roads per year. Miles of road decommissioned (classified and unclassified) with reasons for decommissioning. Miles of right-of-way settled and acres of National Forest land accessed as a result.	Annual	Moderate	Forest Engineer
34		16	Were special use authorizations processed in a timely manner?	64	Review of requests received and process time elapsed to decision.	5 Year Intervals	High	Forest Lands Staff
36, 37, 38	36.01, 37.01, 38.01	16	Are National Forest System lands being managed to improve management effectiveness and enhance public benefits?	65	Miles of boundary surveyed. Title claims and encroachements resolved. Acres of lands acquired and resons for acquisition. Lands conveyed and reasons for conveyance.	Annual	High	Forest Lands Staff
NFMA Requirement		16	How do estimated and actual costs of plan implementation compare? [36 CFR 219.12(k)3]	66	Review of projected forest plan costs compared to actual costs and annual budgets.	5 Year Intervals	Moderate	Forest Planning Staff
NFMA Requirement		17	Are lands being adequately restocked within 5 years of regeneration treatments? [36 CFR 219.27(c)(3)]	67	Routine regeneration examinations following standard protocols.	Annual	High	District Silviculturists
NFMA Requirement		17	Are lands not suited for timber production classified as such? [36 CFR 219.12(k)5(ii)] Have lands identified as not suitable for timber production become suitable? [36 CFR 219.14 (a)	68	Routine timber stand inventory and prescription documented in CISC. Review changes every ten years.	10 Year Intervals	Moderate	District Silviculturists and Forest Silviculturist
NFMA Requirement		17	Are harvest unit sizes within the allowable limits? [36 CFR 219.12(k)5 (iii)] Should maximum harvest unit size limits be continued? [36 CFR 219.27(d)]	69	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Forest Silviculturist, Planning IDT

Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision / Reliability	Responsibility
NFMA Requirement		17	Are appropriate harvest methods used on the Forest. [36 CFR 219.27]	70	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Forest Silviculturist, Planning IDT
NFMA Requirement		18	Determine whether standards, guidelines, and management requirements are being met and are effective in achieving expected results. [36 CFR 219.27 (a)(6)]	71	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Planning IDT
NFMA Requirement		18	Determine when changes in GPRA, policies, or other direction would have significant effects on Forest Plans. [36 CFR 219.10(g)]	72	5 year review	5 Year Intervals	Moderate	Forest Planning Staff
NFMA Requirement		18	Determine if planning information or physical conditions have changed. [36 CFR 219.10(g)]	73	5 year review	5 Year Intervals	Moderate	Forest Planning Staff
NFMA Requirement		18	During monitoring determine research needs. [36 CFR 219.28]	74	Document research needs in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Planning IDT

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The Jefferson National Forest is the source of the purest streams, rivers, and lakes.

EVALUATION OF CAVES

APPENDIX F

INTRODUCTION

All Forest caves will be evaluated using the following rating system. The system allows significance values to be assigned to various cave resources. The assigned values will be used to determine cave classification and will be used in determining cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1989.

CLASSIFICATION

Caves have to be placed into one of the following classes based on management objectives consistent with identified cave resource values.

As new caves are discovered, they will be temporarily managed as Class 1 until an analysis of resource values is completed.

EXPLANATION OF CLASSIFICATION

Class 1 SENSITIVE CAVES.

Caves considered unsuitable for exploration by the general public either because of their pristine condition, unique resources, or extreme safety hazards. They may contain resources that would be impacted by low levels of visitation. These caves are not shown on maps or discussed in publications intended for general public use such as guides, brochures, and magazines.

Class 2 DIRECTED ACCESS CAVES.

Caves with directed public access and developed for public use. These caves are shown on maps or have signs directing visitor access; frequently have guided tours and artificial lighting. Regardless of the level of development, public visitation is encouraged. The caves may have sensitive resources that are protected.

Class 3 UNDEVELOPED CAVES.

Caves that are undeveloped or contain unmaintained or minimal developments that are suitable for exploration by persons who are properly prepared. In general, these caves contain resources that resist degradation by recreational use. However, public use will not be directed toward them.

SIGNIFICANCE
BIOLOGICAL VALUE
HYDROLOGIC VALUE
HERITAGE/ HISTORIC VALUE

SIGNIFICANCE

BIOLOGICAL VALUE

Value	Explanation of Value
0	Biological components lacking.
1	Biological components exist but of low apparent significance.
2	Biological components present and numerous, sensitivity low.
3	Biological components present, numerous and of moderate sensitivity.
4	Biological components numerous and sensitive to disturbance.
5	Biological components very numerous and highly sensitive to disturbance. Habitat is critical to species survival. The cave contains unique species, or ones found on State or Federal sensitive, threatened, or endangered species lists.

HYDROLOGIC VALUE

Value	Explanation of Value
0	Hydrologic components lacking.
1	Hydrologic components present but of low importance.
2	Hydrologic components present but of low sensitivity.
3	Hydrologic components present and of moderate sensitivity.
4	Hydrologic components important and very sensitive.
5	Hydrologic components complex and highly sensitive.

HERITAGE/HISTORIC VALUE

Value	Explanation of Value
0	Heritage resources lacking.
1	Potential for Heritage resources low.
2	Potential for Heritage resources moderate.
3	Heritage resources present or implicated by historic records. Site may be eligible for the National Register of Historic Places.
4	Heritage resources present and sensitive to disturbance. Site eligible for the National Register of Historic Places.
5	Heritage resources present and highly sensitive to disturbance. Site eligible for the National Register of Historic Places.

RECREATIONAL VALUE

Value	Explanation of Value
0	Cave lacks recreational value.
1	Recreational value low. Little or no scenic appeal.
2	Recreational value low but receiving some use. Scenic values low.
3	Recreational values, scenic values, and use moderate.
4	Recreational values, scenic values, and use high.
5	Recreational values, scenic values, and use very high. A major cave of regional or national significance.

GEOLOGIC/MINERALOGIC/PALEONTOLOGIC VALUE

Value	Explanation of Value
0	Features of significance lacking.
1	Some interesting features present.
2	Features present and resistant to disturbance.
3	Features present and of moderate sensitivity to disturbance.
4	Features numerous and of high value. Features sensitive to disturbance.
5	Features rare, valuable, numerous, and/or of great sensitivity to disturbance.

EDUCATIONAL OR SCIENTIFIC VALUE

Value	Explanation of Value
0	Caves lacking educational or scientific value.
1	Caves with low educational or scientific value.
2	Caves with features which can be used for educational or scientific study but are otherwise considered common to the area.
3	Caves which provide opportunity for educational or scientific study.
4	Caves providing unusual opportunity for educational scientific use.
5	Caves with unique opportunity for interpretation and public education or scientific study.

Timber Management enhances healthy forests and restores wildlife habitat.

RESEARCH NEEDS

APPENDIX G

A key element of adaptive management is monitoring. Another element is that of research. Ongoing monitoring will identify needs for further research as the plan is implemented. At its inception; however, the plan can identify areas of concern that can be the subject of "research needs."

Recreation

Develop a link between recreation settings (described in Recreation Opportunity Spectrum categories) and recreation activities in order to assess supply and demand by ROS setting.

Soil and Water

Determine effectiveness of riparian corridor prescription on downstream water quality and aquatic species.

Determine effectiveness of riparian corridor prescription on terrestrial species dependent upon riparian resources.

Determine whether soil productivity is altered by acid deposition. If it is altered, where is this occurring, how does this affect management activities such as timber harvest and prescribed burning, does it affect mountaintop balds, and what are our options for mitigation or remediation.

Timber

Methods to enhance the regeneration of northern red oak, white oak and chestnut oak on more productive sites.

Develop better timber growth and yield projections for various silvicultural treatments, particularly uneven-aged treatments.

Forest Health

Identify understory vegetation and wildlife species composition and abundance changes resulting from gypsy moth defoliation.

Cultural practices necessary to successfully restore American chestnut once resistant planting stock becomes available.

Determine fire frequency (including seasonality, intensity, and spatial extent) based on dendrochronology (or other methods) to establish fire regimes in all forest types.

Determine effectiveness of prescribed burning to restore and maintain woodlands, savannahs, and grasslands.

Wildlife

Identify best methods to expand red spruce within its former range, northern hardwood stands, and open areas.

RESEARCH NEEDS

Determine appropriate methods for managing populations of the small whorled pogonia.

Determine rate of spread of noxious or invasive non-native plant species relative to road density or proximity to travel corridors.

Indiana Bat

Identify roost trees, maternity sites, summer foraging areas, fall swarming areas and other areas of the Forest used by Indiana bats. Characterize and quantify habitat at these sites to help identify additional sites and develop management strategies for the protection, maintenance, and recovery of the Indiana bat.

Peaks of Otter Salamander

A study of temporary logging road recovery and utilization by Peaks of Otter salamanders is needed. Such a study would obtain information on salamander use of recovered roads of different ages and determine when roads recover sufficiently to allow permanent use.

A preliminary study of the genetics of this species to determine whether there is cause for concern about fragmentation and limitations on gene flow is needed.

More information on the movement ecology of *Plethodon hubiichti* is needed.

What are the effects of defoliation by gypsy moths on Peaks of Otter salamander populations?

What is the effect of treatment with Dimilin and BT on the salamander's prey base?

Do *Plethodon hubiichti* leave disturbed areas or die in place when habitat disturbance occurs?

A life table needs be generated for *Plethodon hubiichti* that provides data on population growth rates, survivorship, and generation time. Such life tables developed for populations inhabiting areas with different logging histories would provide useful management information.

What are the life history attributes of *Plethodon hubiichti:* Specifically, what is the age at first reproduction, how many times in the life of a female does she produce egg clutches,, does reproduction occur annually or are years skipped?

What is the role of the Peaks of Otter salamander in the hardwood forest ecosystem? How are terrestrial vertebrate communities organized in this area? What is the position and role of this species in the food web? In what ways does this salamander contribute to the flow of energy in this ecosystem? Describe the energy model for this species and relate it to the life history and population ecology of this species.

What is the social system utilized by this salamander? How does territoriality affect its use of the habitat? What role does it play in the population ecology of this salamander?

What role does the red-backed salamander play in restricting the Peaks of Otter salamander to its known range?

How do Peaks of Otter salamanders respond to habitat recovery and forest succession?

SCREENING CRITERIA FOR NEW OHV AREAS

APPENDIX H

OHV SCREENING CRITERIA

The following is a checklist of minimum considerations for the location of new OHV systems. Screening Criteria is based on 36CFR 295 and FSM 2355. Proposed OHV areas must meet all criteria:

1. Must be compatible with Management Prescription Direction

   Explanation: Management Prescriptions limit OHV or motorized use in various degrees. Refer to desired condition statement and standards for each prescription. If all screening criteria can be met the proposed specific areas must then go through the NEPA analysis.

2. Must be compatible with the Recreation Opportunity Spectrum (ROS) Class.

   Explanation: OHV use is not compatible with Semi-Primitive non-Motorzized ROS class. OHV areas should be located primarily within inventoried Roaded Natural (RN) areas.

3. Must be compatible with Special Area Management Direction

   Explanation: When proposed in or near Special Areas

4. Must be compatible with the Management Direction of Inventoried Roadless Areas

   Explanation: When proposed in or near Roadless Areas

5. Must minimize conflict with Wildlife Habitat

   Explanation: This relates to conflicts with the habitat needs of PETS species or the species being emphasized for the area in question. The use would not occur if any identified conflicts cannot be reasonably mitigated.

6. Must minimize conflict with Riparian/Fisheries Habitat

   Explanation: This relates to concerns for proposed areas in sensitive watersheds or riparian areas or with significant fish species [native trout], etc.

7. Must minimize impacts to Steep Areas/Highly Erodible Soils

   Explanation: This is measurable in terms of soil erosion hazard rating from SRI - severe, moderate, slight. Significant amount of Severe acreage would result in not passing the screen. Steep slopes greatly increase construction cost and maintenance problems.

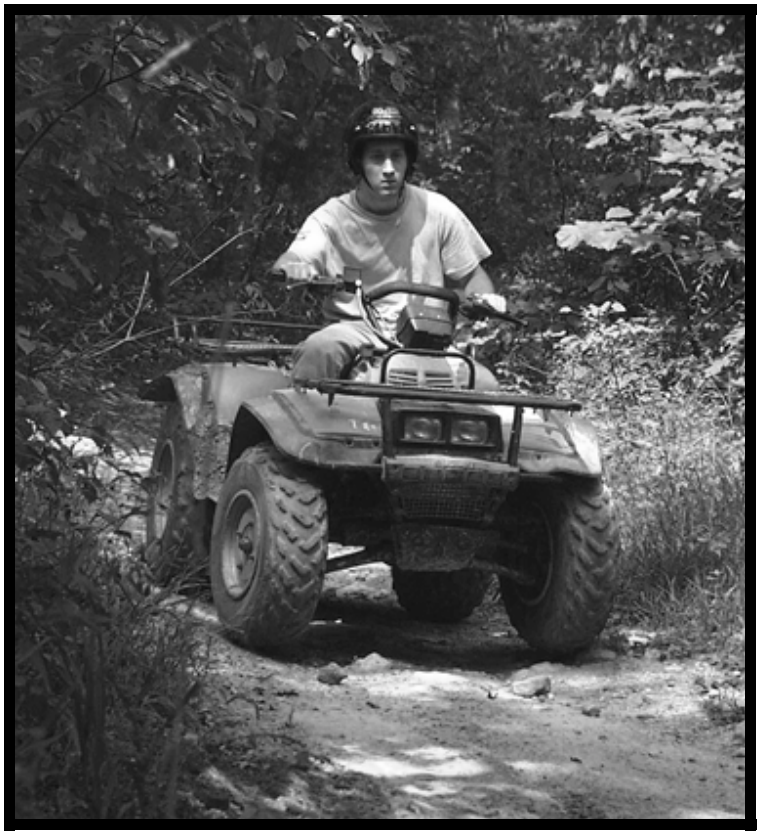
8. Must minimize conflicts with Private Land

   Explanation: The use would not occur if identified conflicts with adjacent private landowners can not be adequately addressed.

OHV SCREENING CRITERIA

9. Must minimize conflicts with Other Recreation Users

   Explanation: Consider recreation users such as hikers, horseback riders, etc., that are already using the area to a significant extent. A new OHV route/trail would not be developed if it would create a high level of conflict with other recreation users with established use patterns.

10. Must be operationally feasible and provide desirable OHV user experiences

    Explanation: Potential OHV areas should be accessible to main roads, have enough room to provide staging areas and suitable camping areas, and be large enough to provide at least 25 miles of route in the future. Short, dead end routes do not generally provide adequate user experience and tend to create illegal use in adjacent areas. A logical distribution of areas should also be considered.