Chapter 1

Purpose and Need of the Proposed Action

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Changes to Chapter 1 Between the Draft and Final EIS

Purpose and Need - We added a list of decision criteria to help clarify how the Preferred Alternative was ultimately chosen.

Issues Analyzed in Detail – We revised some of the issue indicators to make them more consistent with those found in Chapter 3.

Issues Not Analyzed in Detail – We expanded the description for Candidate Research Natural Areas to clarify which areas have been retained and which have been added in the transition from the 1986 Plan to the 2006 Plan.

THE PROPOSED ACTION

The Forest Service proposes to revise the Land and Resource Management Plan (hereafter referred to as "Forest Plan" or the "2006 Plan") for the Monongahela National Forest. The Forest Plan was originally approved and released in 1986, and includes 6 significant amendments that have occurred since. The 2006 Forest Plan establishes direction for managing resources on National Forest System lands within the proclaimed boundaries of the Monongahela National Forest.

This Final Environmental Impact Statement (FEIS or Final EIS) describes four alternatives for revising the Forest Plan and discloses the potential environmental effects of these alternatives. The FEIS is guided by the implementing regulations of the National Environmental Policy Act (NEPA) found in the Council of Environmental Quality Regulations, Title 40, Code of Federal Regulations, Part 1500. The companion document to this FEIS is the 2006 Forest Plan, a detailed presentation of the preferred alternative described in Chapter 2 of this FEIS.

FOREST PLAN DECISIONS

National Forest System management decisions are made in two stages. The first stage is the Forest Plan, which establishes direction and prescription areas that guide the overall management and allocation of resources and land conditions on the Forest. The second stage is the analysis and approval of project proposals at a more site-specific level.

The Forest Plan does not compel the agency to undertake any site-specific project; rather it provides goals and objectives for the Forest to strive to meet in order to achieve desired physical, biological, social, and economic conditions. The Forest Plan also establishes limitations on what actions may be authorized, and what conditions must be met, during project-level decision making.

The authorization of site-specific actions within the Forest Plan area occurs through project decision making, which is the implementation stage of forest planning. Project decisions must comply with NEPA procedures and must be consistent with the Forest Plan.

The six key decisions made in forest planning for long-term management of the Forest are:

1) Establishment of Forest-wide multiple-use goals and objectives, including a description of the desired future condition of the Forest (36 CFR 219.11[b]).
2) Establishment of Forest-wide standards and guidelines to fulfill the requirements of 16 USC 1604 (NFMA) applying to future activities (36 CFR 219.13 to 219.27).
3) Establishment of management areas and direction applying to future activities in those management areas (36 CFR 219.11[C]).
4) Identification of lands not suited for timber production (16 USC 1604[k] and 36 CFR 219.14) and the allowable sale quantity (ASQ) determination for timber that may be sold from the suited timber base during each decade (36 CFR 219.16[a]).
5) Establishment of monitoring and evaluation requirements that will provide a basis for a periodic determination of the effects of management practices (36 CFR 219.11[d]).

6) Recommendation to Congress of areas for wilderness classification where 36 CFR 219.17(a) applies.

The 2006 Forest Plan includes much of the direction and many of the prescriptions found in the 1986 Plan and its amendments. The 2006 Plan also proposes new direction and management prescriptions, based on the Need For Change described in this chapter. The 2006 Plan will replace the 1986 Plan and amendments once the Responsible Official signs the Record Of Decision for this plan revision.

THE RESPONSIBLE OFFICIAL

The Regional Forester is the responsible official for the analysis and decisions in this Forest Plan revision. Conducting analysis, developing alternatives, and preparing the FEIS were done at the local Forest level under the direction of the Monongahela Forest Supervisor. Based on the analysis in the FEIS, the Regional Forester has identified a preferred alternative to become the 2006 Forest Plan. This alternative includes the six key Forest Plan decisions noted above.

FOREST PROFILE

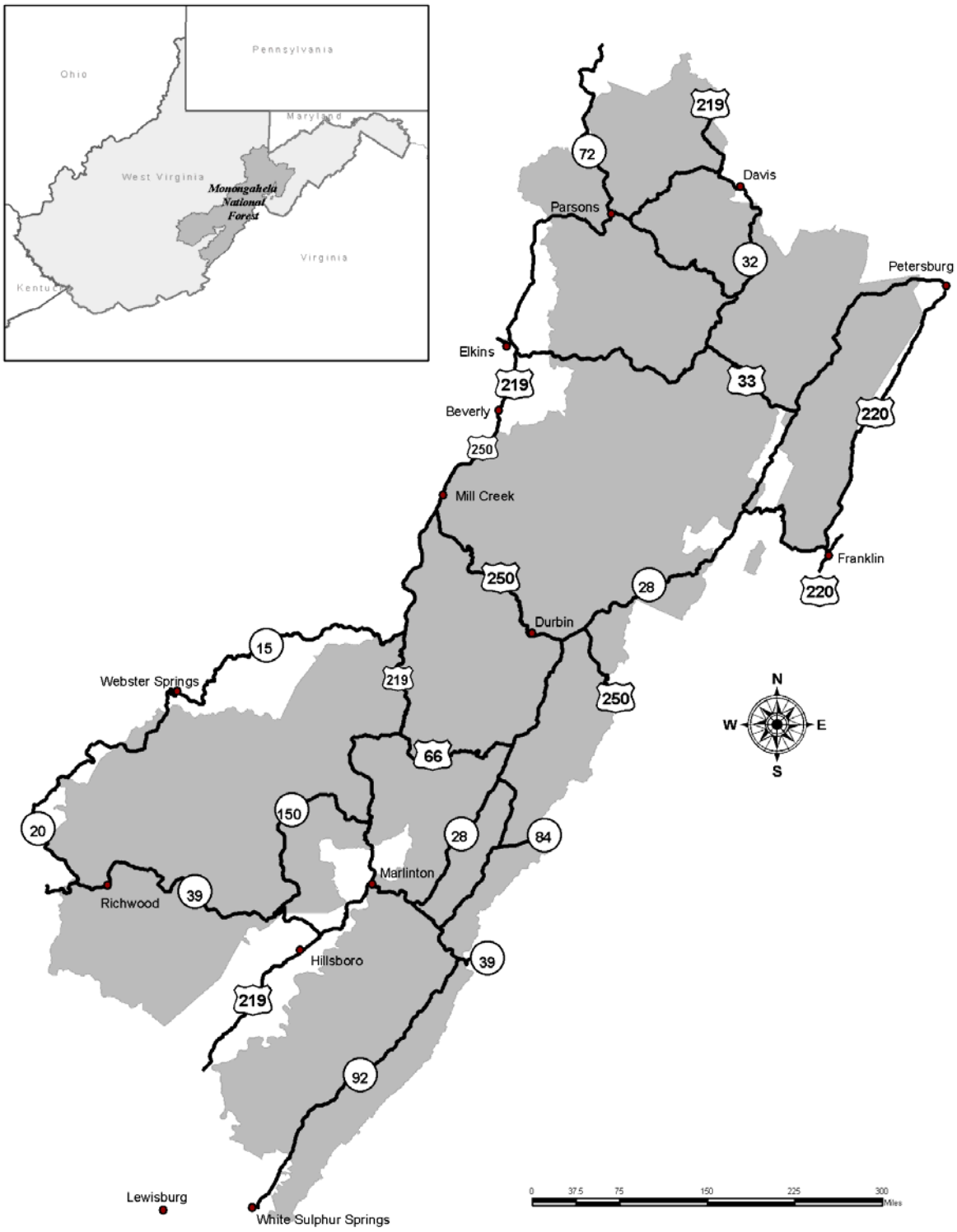
The Monongahela National Forest comprises over 919,000 acres of National Forest System lands in West Virginia. It is by far the largest expanse of public land in the State. The Forest is located primarily in Grant, Greenbrier, Nicholas, Pendleton, Pocahontas, Randolph, Tucker, and Webster Counties, with minor portions in Barbour and Preston Counties. It is administratively divided into four Ranger Districts: Cheat-Potomac, Gauley, Greenbrier, and Marlinton-White Sulphur Springs. The Forest lies within 400 miles of an estimated 96,000,000 people.

The geology of the area features steep north-south mountain ridges and deep river valleys, with elevations ranging from 900 feet near Petersburg to 4,863 feet atop Spruce Knob, West Virginia's highest point. Temperatures can vary from near 100 degrees Fahrenheit in summer to well below zero in winter. Annual precipitation ranges from about 60 inches on the west side of the Forest to less than half that amount on parts of the east side.

The headwaters of six major rivers—the Cheat, Elk, Gauley, Greenbrier, Potomac, and Tygarts Valley—are found on the Forest, as well as four impounded lakes—Lake Sherwood, Lake Buffalo, Summit Lake, and Spruce Knob Lake. The Forest has an estimated 600 miles of coldwater streams, providing more than 90 percent of the high-quality trout waters in the State. Many communities use water that flows from the Forest for all or part of their water supplies.

Due to its geographic location, elevation range, and complex geology, the Forest has great vegetative diversity. There are over 70 species of trees, mostly hardwoods, but conifer species add to the visual variety. Many of the tree species have high value for timber sawlogs and other products. The Forest offers and sells timber for harvest as a way to help achieve vegetation and habitat objectives and support local and regional economies.

Figure 1-1. Vicinity Map for the Monongahela National Forest



Many rare plants and plant communities are found on the Forest, with some at their northern- or southern-most limit of their ranges. Currently 4 plant species are listed by the US Fish and Wildlife Service as threatened or endangered. There are 17 Botanical Areas established on the Forest, and rare plants or communities are also protected in seven National Natural Landmarks, three Scenic Areas, four candidate Research Natural Areas, and five Wildernesses.

The Forest has 10 or less reported wildfires each year, with the average size less than an acre. Over 90 percent of the reported or suppressed fires are human-caused. Research indicates that fire played an important role in maintaining plant communities in fire-adapted portions of the Forest. Major insect pests include the gypsy moth and hemlock wooly adelgid. The major disease concern at present on the Forest is beech bark disease complex.

The Forest provides habitat for hundreds of animal species—including reptiles, amphibians, birds, and mammals—and an estimated 87 fish species. Currently, 5 of the wildlife species are currently listed as threatened or endangered. The Forest affords excellent opportunities for wildlife viewing, hunting, and fishing. About 7,000 acres on the Forest are open to permitted livestock grazing.

The 57,200-acre Spruce Knob-Seneca Rocks National Recreation Area is a major recreation attraction. Developed recreation opportunities are offered at over 40 campgrounds and picnic areas across the Forest. There are over 850 miles of hiking trails, including the Allegheny National Recreation Trail and the Greenbrier Historic Trail. The Forest manages five designated Wildernesses, totaling over 78,000 acres. In addition, many large backcountry areas provide semi-primitive recreation opportunities. Three Scenic Areas—Dolly Sods, Gaudineer, and Falls of Hills Creek—offer a variety of visual attractions in natural settings.

The Forest provides the setting for 40-50 natural gas wells and a natural gas storage field, which are regionally important energy sources. Other mineral resources include commercial quantities of coal, limestone, and gravel. Limestone geologies also contain numerous caves that are popular for recreation, and some that provide habitat for rare species.

The Forest transportation network has an estimated 1,752 miles of classified roads that 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. Others are closed for resource protection or management reasons. The Forest is accessed by U.S. Highways 33, 219, and 250, and by State Routes 4, 28, 39, and 92.

PURPOSE AND NEED FOR THE PROPOSED ACTION

Purpose

The purpose of the Proposed Action is to provide a revised Plan that will:

- Guide resource management activities on the Forest,
- Address changed conditions and direction since the 1986 plan was released,
- Emphasize adaptive management over the long term,

- Meet the objectives and requirements of federal laws, regulations, and policies,
- Maintain or restore long-term ecosystem and watershed health and integrity,
- Contribute to the economic and social needs of people, cultures, and communities,
- Provide consistent direction at the Forest level that will assist managers in making project decisions at a local level in the context of broader ecological and social considerations.

Management direction and monitoring in the 2006 Forest Plan is designed to meet the purpose statements above. Overall management emphasis will largely be determined by selecting a management alternative that best achieves a combination of the following decision criteria:

- The extent the alternative maintains or restores water quality and the soil productivity necessary to support ecological functions in upland, riparian, and aquatic areas.

- The extent the alternative maintains or restores plant and animal diversity and provides habitats needed to sustain viable populations of native and desired non-native species, including threatened, endangered, sensitive, and management indicator species.

- The extent the alternative maintains or restores forest vegetation to a healthy condition with reduced risk of damage from fires, insects, diseases, and invasive species.

- The extent the alternative provides settings for a variety of recreation opportunities, including backcountry or use within a semi-primitive non-motorized recreation setting.

- The extent the alternative provides a variety of uses, values, products and services for present and future generations by managing within the capability of sustainable ecosystems.

Need

The Forest Supervisor and Regional Forester initiated revision of the Forest Plan based on a number of factors, including legal requirements and other needs for change described below.

Legal Requirements

Regulations implementing the National Forest Management Act (NFMA) (1976) require the Regional Forester to revise forest plans and provide the basis for revision. In 1982, instructions to revise forest plans were formulated in the Code of Federal Regulations at 36 CFR 219. The regulations were being revised when our forest plan revision began. The Responsible Official therefore decided to complete plan revision for the Forest under direction provided by the 1982 regulations. Specific instructions found at 36 CFR 219.10(g) state:

> "A forest plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the plan have changed significantly, or when changes in RPA policies, goals, or objectives would have a significant effect on forest level programs."

The Forest Supervisor determined that revision was warranted due to the time period allotted for revision, and because significant changes had occurred in conditions and demands. These changes are summarized in the Need For Change section below.

Need For Change

The Monongahela National Forest began evaluating the need for changing the Forest Plan in 2001, anticipating that the Forest Plan would be revised beginning in 2002. A preliminary evaluation began with the assessment of new information and changed conditions that occurred during implementation of the current Forest Plan. Sources of information for this effort include:

- Meetings with Forest Service employees on each Ranger District;
- Discussions with non-governmental partners and interest groups;
- Discussions with other federal and state agencies, and county officials;
- Review of major decisions that were influenced by the current Forest Plan;
- Review of issues raised in appeals and litigation;
- Results of monitoring and evaluation;
- Changes in law and policy that are relevant to planning and management; and
- Relevant new scientific information.

The Forest adopted a five-step process to identify revision topics. The five steps were:

1. Identify preliminary topics through internal scoping and discussion,
2. Gather public input on the preliminary topics through meetings and the NOI scoping,
3. Document, categorize, and consider public input,
4. Refine revision topics as a result of considering public input, and
5. Review the need for change topics against the Analysis of the Management Situation (AMS). Adjust topics or AMS as needed.

Topic identification was used to develop a framework, which served as a basis and focus for public comment, discussion, and evaluation of the 1986 Plan. Via initial scoping, several indicators suggested a need for revising the 1986 Forest Plan. These indicators were:

Land conditions and public demands have changed.

Increasing demand for Forest commodities such as game wildlife and outdoor recreation opportunities suggested needed changes. Recognition of the importance of long-term ecosystem health has also risen, especially with an increase in forest age and associated insect and disease effects. There was a need to revise the Forest Plan to recognize these changes in conditions and demands and to evaluate their effects on ecological sustainability, including social and economic aspects of a sustainable and healthy forest ecosystem.

Laws, policies, and forest planning protocols have changed since 1986.

Some examples of these changes include: the Government Performance and Results Act Strategic Plan (1998, 2004) affecting management priorities, the National Heritage Strategy affecting cultural resource management, the Roadless Area Conservation Rule (2001) affecting roadless areas, Forest Policy Statements on Ecosystem Management (1992) affecting Forest management in general, Scenery Management System (1999) affecting scenery management, and the Strategic Fire Plan (2000) and the Healthy Forests Restoration

Act (2003) affecting vegetation and fire management. These changes have shifted the course of agency goals and programs since 1986, and need to be addressed in Forest Plan revision.

Results of monitoring and evaluation suggest the need for revision.

Annual Forest Plan implementation, monitoring and evaluation results show that it is not always possible to implement plan direction and still achieve the plan's desired future conditions and projected outputs.

New information has become available.

New scientific information has been released since 1986, including the Southern Appalachian Assessment, State/EPA listings of 303(d) water bodies, new or updated conservation assessment or recovery plan information, research findings on riparian buffer effectiveness, improved data and historical estimates of forest types and conditions, updated ROS and IRA mapping for the Forest, to name a few. This type of new information should be incorporated into Forest Plan revision.

Through this initial process, five preliminary issues were identified and published in the NOI in May 2002. These preliminary issues were:

- Watershed Health
- Ecosystem Health
- Vegetation Management
- Visitor Opportunities and Access
- Land Allocations

In May 2002, the Forest conducted public scoping on the Forest Plan revision. A Notice of Intent (NOI) to prepare an EIS to revise the Forest Plan was published, which initiated a 90-day public scoping period. Six open houses were held across the Forest during this time. The purpose of the scoping period was to gather public input on the draft preliminary issues to identify additional, or refine existing, Need for Change topics. A total of 705 responses were received, of which 412 were form letters. A content analysis of the comments was completed in April 2003 to provide an impartial summary of the comments received.

All public suggestions related to Need for Change topics were considered. Criteria were then developed to identify key factors or conditions that must be met to determine Need for Change topics or to refine revision topics listed in the NOI.

The criteria were:

1. Is the suggested change relevant to one of the six decisions made in the Forest Plan?
   - Forest-wide multiple-use goals and objectives
   - Forest-wide management requirements (standards and guidelines)
   - Management prescriptions and direction
   - Lands suited and not suited for timber production, and ASQ
   - Monitoring and evaluation plan
   - Evaluation of roadless areas in order to make wilderness recommendations
2. Is the suggested need for change consistent with national law and policy?

3. Is the suggested need for change within the Forest Service's decision-making authority?
4. Is the suggested need for change a Forest Plan implementation issue or site-specific analysis?
5. Is the suggested need for change already adequately addressed in the current Forest Plan?
6. Can the suggested need for change be adequately addressed through the Forest Plan or is it outside the scope of Forest Planning?

If the answers to questions 1-3 were yes, and the answers to questions 4-6 were no, and the issue engendered high interest or controversy with employees and/or the public, the issue was considered a major need for change topic, to be fully analyzed in the Plan Revision EIS. If the suggested need for change was of narrow scale and scope, or without much public concern, or widely supported, or considered an improvement or clarification, it was labeled a minor need for change that would be addressed typically with changes to management direction.

Some of the suggestions concerning need for change in the Forest Plan will not be addressed during Forest Plan revision. In most cases, the reasons those suggestions are not being addressed is due to the application of the evaluation criteria discussed above. Some of the more common reasons include:

- The suggestion is already adequately addressed in the Forest Plan or recent decision;
- Sufficient information or rationale is not available to support a change in the Plan;
- The suggestion is outside the mission or authority of the Forest Service; or
- The suggestion is an implementation item that is more appropriately addressed at the project level.

Other suggestions—like ATV travel management, WSR suitability studies, and an NRA Plan—were also too time-consuming to take on during revision. Because the Forest has been given limited time and resources to devote to the revision process, the Forest Leadership Team decided that Forest Plan Revision would only address those issues that are most critical and best meet the criteria described above. Other issues would be addressed through ongoing plan maintenance and amendments, or separate planning processes.

Need for Change Topics

The Revision Team reviewed and refined the preliminary NFC topics as a result of the evaluation criteria used with the content analysis. The final major NFC topics were:

- Backcountry Recreation
- Vegetation Management
- Timber Supply
- Soils and Water

These topics were carried forward to become major Need for Change topics or issues for the DEIS and FEIS. The Backcountry Recreation topic is addressed in the Recreation and Wilderness issue described in the Issues Analyzed in Detail section, below. The Timber Supply and Vegetation Management topics are covered under the Timber Supply and Vegetation Management issues, below. The Soil and Water topic is covered primarily under the Soil Resource issue, below, although additional information related to this topic can be found in the Air Quality and Watershed, Riparian, and Aquatic Resources issues.

ISSUES

Issue Identification

Issues are used in environmental analysis to formulate alternatives, prescribe mitigation measures, or analyze environmental effects among alternatives. At the forest planning level, mitigation measures are incorporated into management direction (goals, objectives, standards, and guidelines) or Management Prescriptions that influence the type, amount, and intensity of management actions that may be implemented under the Forest Plan. The Responsible Official selected major issues for revision based on the need for change topics listed above and one or more of the following criteria:

- Would these issues be used to help develop management alternatives or management direction, or would they be used in the allocation of Management Prescriptions?

- Would the management alternatives, direction, or prescriptions have discernable effects on the issues, their related resources, Forest programs, or outputs?

- Would effects to the issues be sufficiently different by alternative to provide the Responsible Official with rationale for choosing a preferred or selected alternative?

Issues are described below using an issue statement, a brief background explanation that includes how the issue was considered in the revision process, and a summary of the issue indicators used to track effects associated with the issue. More detailed information concerning the issues and indicators can be found in the various sections of Chapter 3 in this EIS.

Most issues are described in terms of how Forest Plan management strategies may affect specific resources or conditions. The term "management strategies" generally refers to Forest Plan management direction (i.e., goals, objectives, standards, and guidelines) and the allocation of Management Prescriptions (MPs) that differ by alternative. The MPs provide a broad range of management emphasis that would allow for a different mix of management activities and intensities to potentially occur under each alternative. The Forest Plan, however, does not authorize the implementation of any management activities.

Issues Analyzed in Detail

Issues are described below in the same order they appear in Chapter 3. The order is organized around similar resource groupings. Physical resources (air, soil, water) are described first, followed by biological issues (species, habitats, vegetation), and then social and economic issues (timber, minerals, recreation, wilderness, scenery, roads, economics).

Air Quality

Issue: Forest Plan management strategies may affect air quality in and around the Forest.

Background: Although a majority of this area's pollution comes from sources outside the Forest, activities from within the Forest boundaries can also affect air quality in the region. Activities such as timber harvesting, oil and gas well drilling and operations, road construction/ maintenance and prescribed fires all produce emissions. Additionally, effects of these activities may exacerbate existing air quality related issues. However, not all of these activities are expected to change significantly for all alternatives within this planning period. Natural gas exploration and development is expected to remain at current levels, or decrease from existing levels, depending on the alternative. Also, the number of days where road construction or maintenance occurs is not expected to increase over existing levels, and is not a major component of air pollution problems in West Virginia. The remaining two activities, timber harvesting and prescribed fire, are expected to change within the planning period. Particulate matter (PM) and Nitrogen Oxide (NOx) emissions from these activities will contribute to the total pollution load and are the major pollutants of concern in terms of contributions to NAAQS. Therefore, potential emissions of these pollutants will serve as indicators for air quality effects.

Indicators: Potential emissions of PM and NOx from predicted timber harvest and prescribed fire are evaluated and compared to total PM and NOx emissions in counties near the Forest.

Soil Resource

Issue: Forest Plan management strategies may affect the soil resource.

Background: Erosion and acid deposition occur to varying degrees across the entire Forest, and their effects to soil can be exacerbated by soil disturbance. The Management Prescriptions (MPs) in the Forest Plan provide for a variety of activities to occur on varying soil types, ranging from little or no management (i.e., soil disturbance) in Wilderness areas to activities that call for a total commitment of the soil resource where soil is removed and replaced with a permanent facility. Although certain soil-disturbing activities, like mineral development or mountain biking, can occur in localized areas throughout the Forest, large-scale soil disturbance associated with timber harvest and road construction most often occur in MPs with suitable timberland. Because the amount and distribution of these MPs and their predicted activities vary by alternative, they can be used to show relative differences in the potential that timber harvest and road construction may have for impacts on soil quality and productivity related to:

1) Soil erosion and sedimentation, and
2) Soil nutrient depletion and soil acidification related to acid deposition

Indicators: The following indicators are used to reflect the potential relative change under each alternative based on anticipated levels of management activities that could have substantial effects on the soil resource:

- Acres of potential timber harvest in suited MPs by alternative,
- Acres of high-risk acid sensitive soils by MP by alternative.

Watershed, Riparian, and Aquatic Resources

Issue: Forest timber management strategies may affect watershed, riparian and aquatic resources.

Background: Timber harvest and connected actions have the potential to affect a number of watershed processes. The removal of timber, the type of logging method used and the associated transportation system all have the potential to affect watershed, riparian and aquatic conditions to varying degrees. The potential risk of these activities is dependent on the scope of the action, the existing site conditions, and the effectiveness of the mitigation measures used. Because the amount and distribution of timber harvest varies by alternative, it can be used to show the relative differences in the potential impacts related to:

- Soil erosion and sedimentation effects on aquatic ecosystems,
- Soil nutrient and base cation depletion and soil acidification related to acid deposition,
- Water quality and quantity, and
- Channel and floodplain modifications.

Indicators: The following indicators are used to reflect the differences between alternatives and the potential risk to watershed, riparian and aquatic resources:

- Acres of Management Prescriptions that allow commercial timber harvest by alternative,
- Acres, volume, and logging methods of potential timber harvest by alternative.

Terrestrial Ecosystem Diversity (Coarse Filter)

Issue: Forest Plan management strategies may affect the amount, distribution, structure, and composition of ecological communities.

Background: Ecological communities are the foundation of biological diversity. Communities on the Forest include those in need of ecological restoration, such as spruce forests and oak forests, as well as unique communities in need of protection, such as bogs and shale barrens. A key function of forest planning is to provide for such restoration and protection needs while also providing a mix of diverse habitats to meet the demands of multiple uses.

To address the requirements for maintaining diversity and viable populations, the Forest Service has developed an analysis process called species viability evaluation. Species viability evaluation takes a two-part approach that is referred to as a "coarse-filter/fine-filter" approach, or an "ecosystem diversity/species diversity" approach. Coarse-filter analysis refers to evaluating biodiversity conservation through a classification and assessment of the component ecosystems that make up a landscape. It is based upon the theory that conserving an adequate representation of plant and animal communities will maintain most species that occur in a given planning area.

This analysis focuses on ecological communities that predominate on the landscape; communities that are rare, unique, or declining; and communities that provide habitat for species with potential viability concerns. Communities were evaluated for direct effects of management on National Forest System (NFS) land. Communities and the species that inhabit them also are affected by activities on intermingled non-NFS land; therefore, the cumulative effects of Forest Service and other activities were evaluated to the extent possible for all land within the Forest boundary (proclamation boundary and purchase units).

Indicators: The indicators for this issue are:

- Amount and development stages of major forested communities by alternative,
- Amount of each rare and unique community potentially affected by alternative,
- Representation of ecological communities in Minimum Dynamic Area reserves (potential old growth) by alternative.

Terrestrial Species Viability (Fine Filter)

Issue: Forest Plan management strategies may affect the level of risk to species with potential viability concerns, and may also be used to provide a mix of habitats for the species found on the Forest.

Background: Maintenance of species viability is an integral component of the Forest Service's responsibility to conserve biological diversity. The fine-filter analysis focuses on species that may have viability concerns within the Forest boundary or have been identified by others as species of concern due to declining populations or other factors. From the 451 potentially rare or declining species that were considered in this analysis, the screening process produced a list of 213 species to be evaluated in detail (see Appendix D). These species include 14 mammals, 60 birds, 5 amphibians, 5 reptiles, 52 invertebrates, 70 vascular plants, and 7 nonvascular plants.

Because of the large number of species evaluated and a lack of detailed information for many of them, quantitative population viability analysis was not a practical way to assess species viability. Instead, a qualitative rating system was used that produced a viability outcome for each species. These outcomes range from A to E on a graduated scale, depending on habitat abundance, habitat distribution and connectivity, and population factors.

As part of its strategy to address NFMA viability requirements and avert the need for listing under the Endangered Species Act (ESA), each region of the Forest Service has developed a list of Regional Forester's Sensitive Species (RFSS), which are species for which population viability may be a concern. Direction in the Region 9 supplement to the Forest Service Manual emphasizes maintaining viability for RFSS and ensuring that management activities do not result in trends toward federal listing (FSM 2670.22, 2670.32). Manual direction requires Forests to determine whether their actions will affect RFSS, and if so, whether the actions will result in a loss of viability or a trend toward federal listing (FSM 2670.32).

Indicators: The indicators for this issue are:
- Distribution of viability outcomes by alternative,
- Effect determinations for Regional Forester's Sensitive Species by alternative.

Terrestrial Management Indicator Species (MIS) and Other Species of Interest

Issue: Forest Plan management strategies may affect habitat for MIS and other species of management interest.

Background: NFMA regulations require Forests to select MIS to estimate the effects of each alternative on fish and wildlife populations. The regulations further direct that MIS are to be chosen that are believed to indicate the effects of management activities. Planning alternatives

must be evaluated in terms of habitat and population trends of MIS (36 CFR 219.19(a)(2)), and MIS are to be monitored during plan implementation and relationships to changes in habitat determined (36 CFR 219.19(a)(6).

Proposed MIS for the Forest are cerulean warbler, wild turkey, West Virginia northern flying squirrel, and eastern brook trout. The Forest revised its MIS list for several reasons. Experience has shown that some of the MIS chosen for the 1986 Forest Plan are habitat generalists whose populations cannot easily be related to management-related changes in habitat (e.g., white-tailed deer, black bear). Other species have proven difficult to monitor because of low populations, sparse distributions, or cryptic habits (e.g., snowshoe hare). Also, the Forest's 10-species MIS list under the 1986 Plan has challenged our ability to collect meaningful monitoring data. In revising the MIS list, we have emphasized species that are closely associated with habitats of interest. Habitat indicators were projected for Forest Service land to reflect direct and indirect effects of expected Forest Service management. Habitat indicators for the terrestrial MIS and other species of interest are described below; indicators for brook trout are discussed in the *Watershed, Aquatic, and Riparian Resources* section. A limited habitat-related discussion is included here for West Virginia northern flying squirrel, and a more detailed analysis for this species is included in the *Threatened and Endangered Species* section.

Many species on the Forest—other than viability concern species, threatened and endangered species, sensitive species, and MIS—are important to the public. While analyzing every species on the Forest is not practical, the Forest is home to two high-interest game species that are not included in the other wildlife categories analyzed in this EIS: white-tailed deer and black bear.

The white-tailed deer is the most popular game animal in West Virginia. However, in addition to its value as a game animal, the white-tailed deer is a voracious browser, and high deer densities can affect the composition and structure of forest communities. At high population densities, deer becomes a keystone species with the capacity to hinder forest regeneration, change the composition and structure of the understory, and affect other wildlife species through direct competition and changes in habitat.

The black bear is a popular game animal in the region, and is also popular with wildlife watchers. Compared to most other wildlife, black bears have large home ranges and require habitats with low densities of open roads to serve as refuges from disturbance and hunting mortality. Because of this special requirement for large blocks of relatively remote habitat, the Forest provides much of the prime bear habitat in the region.

Indicators: Effects to the following habitats for MIS and other species of interest are analyzed and compared by alternative:

- Optimum habitat for cerulean warbler – area of mid-late and late successional (80+ years old) mixed mesophytic and cove forests.

- Optimum habitat for wild turkey – area of oak and pine-oak forest of optimum mast-producing age (50-150 years old), plus openings, within MPs 2.0, 3.0, 6.1, and 6.3.

- Optimum habitat for West Virginia northern flying squirrel (area of mid-late and late successional spruce forest) and potential active spruce restoration areas (roughly approximated by area of mid-late and late successional northern hardwoods in MP 4.1, outside of current suitable flying squirrel habitat).

- Edge habitats providing abundant browse for white-tailed deer – all early successional forest (0-19 years old) plus openings.

- Optimum habitat for black bear – 50 to 150-year-old oak and pine-oak forest in MPs with limited public motorized access (MPs 4.1, 5.0, 5.1, 6.1, 6.2, 6.3, and remote backcountry portions of the NRA).

Threatened and Endangered Species

Issue: Forest Plan management strategies may affect federally listed species and their habitats.

Background: Federal agencies must comply with the ESA of 1973 as amended, which includes a requirement to consult with the U.S. Department of Interior, Fish and Wildlife Service (USFWS) on projects that may affect federally listed threatened, endangered or proposed species. Currently there are 9 federally listed species known to occur on the MNF, but no species that are proposed for listing.

Although Forest Plan revision would have no direct effects on T&E species, Plan revision does provide for species protection and habitat restoration through management direction and the allocation of management prescriptions that would limit or prohibit management activities that pose a threat to T&E species or their habitats. Other management prescriptions could allow certain activities that may pose threats. This analysis will look at the relationships between those prescriptions and how management allowed within them may potentially affect listed species and their habitats.

Indicators: For each listed species, effects are assessed by determining whether Forest Plan management direction is adequate to protect listed species and their habitats from potential direct, indirect, and cumulative effects of the four management alternatives considered in detail. Potential effects for some species are based on the level and intensity of management activities that could occur under the Management Prescriptions assigned to each alternative. Specifically, the following habitat components are used to assess effects on these species:

Running buffalo clover: Potential effects to young and old successional stages of mixed mesophytic forest by alternative.

Shale barren rock cress: Potential effects to shale barrens by alternative.

Small whorled pogonia: Potential effects to old and mature mixed mesophytic forest, old and mature oak forests, and old and mature pine-oak forests by alternative.

Virginia spiraea: Potential effects to the banks of low-elevation large streams by alternative.

Virginia big-eared bat: Potential effects to foraging area, maternity sites, and hibernacula by alternative.

Indiana bat: Potential effects to maternity site habitat, hibernacula, key areas, and primary range by alternative.

West Virginia northern flying squirrel: Potential effects to suitable habitat (high-elevation spruce and spruce-hardwood forests) by alternative.

Cheat Mountain salamander: Potential effects to Cheat Mountain salamander habitat by alternative.

Bald eagle: Potential effects to nesting habitat in riparian areas by alternative.

Additionally, species viability outcomes from the Species Viability Evaluation are used as an indicator of potential cumulative effects on all the species noted above.

Non-native Invasive Plant Species

Issue: Forest Plan management strategies may affect the spread and control of NNIS.

Background: NNIS have been recognized at the national level as one of the four major threats to the ecological sustainability of National Forest Systems (NFS) land. NNIS spread via a variety of pathways. For most species, invasion and spread are facilitated by some type of human-caused habitat alteration, especially those alterations that include soil disturbance. Typical alterations that can encourage NNIS include roads, hiking and horse trails, grazing allotments, utility corridors, wildlife openings, or vegetation management. Some of these factors, such as trails, grazing allotments, and utility corridors, are not likely to change much by alternative. However, road construction and wildlife opening construction are likely to vary according to the amount of land that is allocated to MPs that emphasize vegetation management. Road construction is directly related to the amount of timber harvesting that is conducted in areas that do not already have adequate access.

Indicators: The indicators for this issue are:
- Amount of timber harvest 3/8 of a mile or more from existing roads by alternative,
- Amount of maintained openings by alternative.

Vegetation Management

Issue #1: Forest Plan management strategies may affect the potential for vegetation diversity and sustainability across the Forest.

Background to Issue #1: The Forest Service is responsible for providing a diversity of plant and animal communities and tree species while providing for the overall multiple-use objectives

of national forests (36 CFR 219.26). The Forest Service is also responsible for ensuring a sustainable flow of forest products (Multiple-Use Sustained Yield Act).

An estimated 70 to 80 percent of the Forest is currently the same approximate age (70-100 years) with similar stand conditions. Conversely, there are relatively few forest stands in younger age conditions. The effects of an aging forest include: 1) an increasing susceptibility to forest decline and mortality from insect and disease outbreaks; 2) a decrease in timber and mast productivity and wildlife habitat diversity; 3) an increase in shade-tolerant tree species; and 4) an increase in fuel loads from both down and standing dead trees that result in a higher potential of more severe fires during periods of extended or extreme drought.

A mix of age classes across the Forest is more conducive to long-term sustainability and diversity to provide a variety of habitats and products in perpetuity. Forest management can affect the mix of age classes or successional stages by implementing regeneration harvests in those Management Prescriptions that allow or emphasize vegetation management. The amount and distribution of these Management Prescriptions vary by alternative, and therefore can be used as an indicator for potential even-aged regeneration harvests and successional stage changes by alternative.

Creating variety in the age class structure in forested stands across the landscape through use of even-aged regeneration harvesting, as opposed to greater variety in age class structure within a stand as a result of uneven-aged stand management, creates diversity that helps lessen the effects of aging and decaying forests. Increases in tree mortality, insects, disease, and shade-tolerant tree species are all part of the aging of a forest and are not inherently negative. However, the concern is that a very large percentage of the Forest will be going through these changes at the same time. Providing for diversity in age classes is one way to reduce the impacts of these changes across the landscape so that mast and timber production, regeneration of shade-intolerant species, and habitat variety are better sustained at the landscape level.

Indicator for Issue #1: Age class distribution by alternative.

Issue #2: Forest Plan management strategies may affect the potential for vegetation restoration in oak and spruce communities on the Forest.

Background to Issue #2: Species composition is best illustrated using forest types. A forest type indicates the dominant tree species or group of species present but does not always reflect all of the species present in a forested stand. Usually numerous other tree species are also present with the tree species that define a forest type, but in fewer numbers. On the MNF, plant species common to northern climates intermingle with plant species common to southern climates. This results in stands with a great number of species and species mixes. Over 40 commercial tree species occur on the Forest, and it is not uncommon to find 10 to 15 commercial species growing in a 10-acre stand. This high level of diversity is due to the unique geographic, climatic, and topographic features of this area.

Oak communities are currently in decline due to changes in stand density, structure, and composition leading to a decreasing trend in vegetation diversity. In areas where fires helped

perpetuate oak and oak-hickory forests, decades of fire suppression have created conditions where oak species are not competing well with species such as striped and red maple and American beech. Light conditions in the mid-story are not suitable for oaks to regenerate. Timber harvest and prescribed fire can be used to mimic the effects of historic fire regimes in areas where these activities are both allowed by Forest Plan direction and are considered ecologically appropriate.

Although red spruce has been slowly expanding its range over the past few decades, red spruce and spruce-hardwoods mixed forests once covered much more area than they do today. While opportunities for active restoration of the red spruce community are limited in areas of suitable habitat for the West Virginia northern flying squirrel, there are areas where red spruce and mixed red spruce-hardwood forests could be actively managed to increase red spruce dominance.

The oak and red spruce communities represent the ends of the spectrum of diversity on the Forest. Red spruce dominates at higher elevations, under cool moist conditions, while oak communities flourish under drier, warmer conditions at lower elevations. Fire was historically a frequent visitor to oak communities, usually about every 7 to 32 years in a given area; however the fires were typically low intensity, mainly affecting the ground surface. In red spruce communities fire is not the driving disturbance regime, as it may have replaced stands only every 300 to 1,000 years. However, when fire occurred in spruce stands it was most likely of high intensity, resulting in stand replacement.

This analysis focuses on the potential effects from management prescribed under each of the alternatives, and how that management may affect the diversity, sustainability, and general health of oak and spruce communities within the Forest.

Indicators for Issue #2: The indicators for Issue #2 are:

- Acres of potential change in restoration of oak and spruce communities by alternative,
- Acres of Fire Regime I Condition Class 3 and Fire Regime III Condition Class 2 in MPs 3.0, 6.1, and 8.1 by Alternative.

Timber Supply

Issue: Forest Plan management strategies may affect the amount of land suitable for the sustainable harvest of timber products, the amount of timber offered by the Forest, and the methods used to harvest the timber.

Background: In 1897, the Organic Act established the national forests to furnish a continuous supply of timber to the nation and to protect watersheds. This direction remains today. The regulations for the National Forest Management Act (NFMA) require the Regional Forester to estimate the maximum amount of timber that can be sold annually on a sustained-yield basis. The NFMA also requires the identification of lands that are not suited for timber production.

The 1986 Plan identifies 46 percent of Forest lands as suitable for timber production. Some of this area may be unsuited for timber production because of constraints such as extremely steep slopes or limited access. Changes in national policy, such as the Roadless Area Conservation

Rule, have identified additional areas that may now be inappropriate for commercial timber production. On the other hand, trees have been growing for 18 years since 1986, and this growth has added considerably to the potential timber volume on the Forest. There is an identified need to recalculate timber production potential for the Forest.

Timber management on the Forest is primarily influenced by the allocation of Management Prescriptions (MPs), as some areas on the Forest are assigned prescriptions that allow or emphasize timber harvest, and others are not. Some of the MPs are considered not suitable for managing timber, and some include lands that are both suitable and unsuitable. The prescriptions with suitable lands also have desired conditions for vegetation that may affect the harvest methods used to achieve them. The range of alternatives proposed in this EIS have different allocations of MPs, and can be used to show relative differences in timber production and methods based on those allocations.

Indicators: The following indicators reflect the potential relative change under each alternative based on anticipated levels of management activities that could have effects on timber supply.

- Acres of land suited and not suited for timber management by alternative,
- Potential cubic board feet of ASQ by alternative,
- Acres treated by harvest method by alternative.

Mineral Resources

Issue: Forest Plan management strategies may affect mineral resources available for exploration and development.

Background: Forest Plan direction for the management of mineral resources has been revised during the revision process. Forest-wide desired conditions and goals were added, and a number of the standards and guidelines that were in the 1986 Forest Plan, as amended, were rewritten for clarity and integrated with other Plan resource direction. Some standards and guidelines were eliminated because they were repetitive, or they were better suited to an implementation guide, or they were already covered by law, regulation, or policy. Management Prescription direction was reviewed and updated in a similar manner. The overall result of these direction changes is that revised protection for and from mineral resource activities is much the same as in the 1986 Forest Plan, and desired conditions and goals for mineral management have improved.

The major effects to mineral management that this analysis will assess are related to Forest Plan Management Prescriptions (MPs). The MPs contain management direction for mineral management that could potentially affect mineral exploration and development. In particular, there is a standard that prohibits surface occupancy on federal gas and oil leases in several MPs that would restrict lease operators from exploring and developing gas reserves in all but the outer portions of the prescription unit areas. Because the MP allocation changes by alternative, the potential effects from the MP prohibition of surface occupancy would change as well. This analysis identifies how much gas production may be affected by alternative due to these changes.

Indicators: The following indicators reflect the potential relative change by alternative based on management direction that could affect the availability of mineral resources:

- Percent of federally owned natural gas acres available for exploration and development,
- Billions of cubic feet of potential natural gas resources available for production from the MNF.

Recreation and Wilderness

Issue: Forest Plan management strategies may affect the amount of backcountry recreation areas offered by the Forest, including areas recommended for wilderness.

Background: The 1986 Forest Plan emphasizes backcountry recreation on approximately 124,500 acres of primarily semi-primitive non-motorized (SPNM) landscapes, as described for MP 6.2. Over 78,000 acres of congressionally designated Wilderness (MP 5.0) also support this type of management emphasis. The combined MP 6.2 and 5.0 areas that emphasize backcountry recreation make up an estimated 22 percent of the Forest.

As one of the six decisions made in Forest Plan revision, the Forest re-inventoried its roadless areas in order to evaluate those areas for wilderness potential. The Roadless Area Inventory process looked at all existing MP 6.2 areas, Roadless Area Review and Evaluation (RARE II) areas, areas inventoried for the Roadless Area Conservation Rule and any area 5,000 acres or greater with less than ½ mile of improved road per 1,000 acres to determine if they qualified as Inventoried Roadless Areas (IRAs). The inventoried areas provide the best opportunities for 6.2 management, as well as the best pool for potential Wilderness recommendations. As there are no recommended Wilderness areas in the 1986 Forest Plan, a new MP (5.1) was created for Forest Plan revision to represent Wilderness Study Areas.

This issue explores the question of whether the current mix of management emphasis associated with backcountry recreation is an appropriate amount and distribution across the Forest. It also looks at how much if any area should be recommended for wilderness study.

Indicators: The indicators used to measure effects on this issue are:
- Acres of MP 6.2 (Backcountry Recreation) by alternative,
- Acres of MP 8.1 SPNM (backcountry recreation within the NRA) by alternative,
- Acres of MP 5.1 (Recommended Wilderness) by alternative,
- Total Acres of Backcountry Recreation opportunity (5.0, 5.1, 6.2, 8.1 SPNM) by alternative,
- Recreation Opportunity Spectrum (ROS) Class distribution by alternative,
- Percent contribution to backcountry recreation opportunities in West Virginia by alternative.

Scenic Environment

Issue: Forest Plan management strategies may affect the scenic environment.

Background: No major issues directly related to scenic resources were identified during public involvement or the Need For Change analysis process. However, many comments received did indicate an interest in the Forest's scenery and how management activities may affect that scenery. Management activities have the potential for directly, indirectly, and cumulatively affecting scenic resources through vegetation management, restoration, or development

activities. These activities are related to many of the Need For Change topics, and could be implemented under any of the alternatives. Disturbance events of insect infestations and wildfire events can also affect scenic resources.

Indicators: The following indicators reflect the potential relative change under each alternative based on anticipated levels of management activities that could have substantial effects on the scenic environment:

- Acres of even-aged harvest by alternative,
- Acres of intermediate harvest treatments by alternative,
- Acres of prescribed fire use by alternative.

The potential for ecological disturbance events (insects, disease, wildfire) to affect the scenic environment is also discussed.

Road Transportation System

Issue: Forest Plan management strategies may affect the road transportation system and the public access that the roads provide.

Background: Management of National Forest System roads is an issue of national concern. Public interest in the roads within National Forests is increasing, and few natural resource issues in recent years have attracted as much public scrutiny as road management. Concerns linked to the roads within National Forests include public access, resource damage, habitat loss, maintenance capabilities, and economics. Yet some level of road development is needed to produce the goods and services that Americans expect from their National Forests.

Comments received both externally and internally reflected two components: the number of amount of Forest roads that are developed, and the access they provide to the public. A number of comments focused on the amount of roads that should be maintained as part of the system. Comments were divided between those expressing the need to maintain current access and roads for resource management and recreation needs and those supporting a smaller road system to reduce impacts of roads on other resources. Some comments expressed concerned that overall access to the Forest was decreasing. Other comments expressed concern about concentrating public use on fewer and fewer acres, thus causing increased resource damage. Still other comments questioned the merits of reducing the road system in the face of expanding recreation use and access needs. Opposing comments favored a policy of “no new roads”, especially in areas that are currently classified as unroaded.

Indicators: The following indicators are used to measure the effects of management strategies on Forest roads on the Forest by alternative:

- Potential change in forest classified roads related to timber harvest by alternative,
- Potential change in public motorized access related to Management Prescription allocation by alternative.

Social and Economic Environment

Issue #1: Forest Plan management strategies may have social and economic effects on local counties and communities.

Background to Issue #1: The socio-economic environment is not directly linked to any of the Need For Change topics found in the AMS Summary (USDA Forest Service 1997) for the Forest Plan revision. However, nearly all Forest management activities have the potential to directly or indirectly affect the socio-economic environment (chiefly counties and communities). These activities are related to, or could be implemented under, all alternatives.

Indicators for Issue #1: Indicators for this issue include county populations, lifestyles, attitudes, beliefs and values; social organization, land-use patterns, civil rights, employment and income, and federal payments to counties.

Issue #2: Forest Plan management strategies may affect the financial efficiency of operating the National Forest.

Background to Issue #2: The financial and economic efficiency of operating the National Forest is of great concern to the Forest Service and public alike. Controversy has swirled in recent years around such financial issues as "below-cost" timber sales, "subsidized" grazing, and recreation facilities that are deteriorating due to lack of maintenance or replacement funding.

Indicators for Issue #2: The indicator used in financial and economic efficiency analysis is Net Present Value (NPV), in which discounted costs are subtracted from discounted values over a 50-year time period.

Issues Not Analyzed in Detail

In addition to the issues described above, there were many minor Need For Change topics that were considered as issues but not necessarily analyzed in detail in this EIS. Those topics or issues, and how they were addressed in Plan revision, are described below.

Range Resources

Range allotments on the Forest cover less than one percent of the federal land base, and they are not expected to increase or decrease substantially over time, or change by alternative in the EIS. Forest-wide and Management Prescription direction for Range Resources was reviewed and updated in the 2006 Forest Plan. Effects from livestock grazing are discussed under General Effects in the Chapter 3 resource sections.

Scenery Management System

The Scenery Management System (SMS) is the new agency-mandated method for management of scenic values, replacing the previous Visual Quality Objective System. Use of this new

system has been incorporated into the 2006 Forest Plan. Effects to the Scenic Environment are analyzed in detail in Chapter 3 of this EIS.

Monitoring and Evaluation

Through implementation of the monitoring and evaluation plan, the Forest has found that some Forest Plan requirements cannot be fully implemented, do not yield meaningful results, are not measurable or scientifically supported, or are not reasonably affordable. The Monitoring and Evaluation Plan was revised and improved to ensure cost-effective, meaningful surveys are completed, and to meet the latest agency requirements. This is one of the six planning decisions to be made in Forest Plan revision.

Heritage Resources

A review of the 1986 Forest Plan indicated that updates were needed in the direction for heritage resources. The 2006 Forest Plan includes new direction to address changes in the Heritage Program since 1986, and to ensure NRHP-eligible sites are adequately protected. Heritage resources were not analyzed in detail in this EIS, as they were not identified as an issue or concern, and potential effects to or from the resources would not vary measurably by alternative.

Land Acquisition

Current land acquisition priorities do not necessarily reflect direction provided in the 1986 Forest Plan. This direction was reviewed and updated in the 2006 Forest Plan. In addition, lands located outside of the Forest proclamation boundary have been purchased since 1986. These lands have been assigned a management prescription in Forest Plan revision.

Fire Management/Prescribed Fire

The 1986 Forest Plan emphasizes fire protection and prevention. The 2006 Plan broadens the focus to using fire as a management tool for ecological restoration and fuel reduction. This strategy includes all activities required for protecting natural resources and property from fire, and the use of fire to meet resource and land management goals. Effects from prescribed fire and fire suppression are addressed in many resource sections in Chapter 3 of this EIS.

Planning Areas

The 1986 Forest Plan divided the Forest into planning areas called Opportunity Areas. The Opportunity Area boundaries do not necessarily follow geographic boundaries, and they focus management activities on relatively small units of land. Ecosystem Management principles introduced by the Forest Service in 1992 emphasize the importance of using watersheds as both a planning and analysis tool. The Forest has embraced this philosophy, and has been conducting watershed assessments for a number of years, but this practice has not been assimilated into the 1986 Plan. The 2006 Forest Plan incorporates the concept of using watershed boundaries as planning areas through changes in management direction. Opportunity Areas have been dropped.

Editorial Changes

Many editorial changes were made in the revision of the Forest Plan. These changes included modifying or clarifying direction in the existing plan, making the plan easier to read and understand, removing items that do not pertain to the six decision made in forest planning, or removing direction that can be found elsewhere, such as in Forest Service manual or handbook direction. These changes were designed to make the 2006 Plan more strategic and less tactical in nature, with more focus on what needs to be done and less on how it should be done.

Species Viability Evaluations

As a part of the requirements in 36 CFR 219, the Forest must ensure that viable populations of species are provided for under the Forest's multiple use management. A species viability evaluation was completed and management options for species or community conservation were developed and incorporated into the 2006 Forest Plan. In addition, language related to specific groups of species was reviewed and updated. These groups include listed species, Regional Forester's Sensitive Species (RFSS), Management Indicator Species, and migratory birds. The RFSS List can and will be updated outside of the revision process. A summary and tables of the Species Viability Evaluation are provided in Chapter 3 of this EIS and Appendix D, respectively.

Wild and Scenic Rivers

Existing eligibility determinations and classifications relating to Wild and Scenic Rivers were brought forward and incorporated into the 2006 Plan. Direction and information concerning these rivers were also added to the Plan. These rivers would not change by alternative in this EIS, and they were therefore not analyzed in detail, although they were considered in some of the effects analyses where appropriate. A check of land ownership changes since the 1995 Draft Wild and Scenic River Study Report indicated that there are no additional river segments to be added to the existing inventory. A suitability recommendation for Wild and Scenic River designation will not be brought forward at this time due to time constraints; however, the trigger for initiating a suitability study was added to Forest-wide direction.

Spruce Knob – Seneca Rocks National Recreation Area (NRA)

Forest Planning direction provides guidance to assign one management prescription to a congressionally designated area. The NRA is assigned several management prescriptions in the 1986 Plan. A Management Prescription was developed and assigned to the NRA for Plan revision, which means that the 1986 prescriptions within the NRA no longer apply. The management complexity of the area is largely addressed through an ROS-related strategy. For example, NRA 6.2 prescription areas in the 1986 Plan would now be managed as a Semi-Primitive Non-Motorized ROS Class, which provides similar management emphasis.

Management Prescriptions

Some of the Management Prescriptions in the 1986 Plan are outmoded or have never really been used to manage resources (1.1, 2.0, 4.0, and 9.0). These have been replaced by new prescriptions

that are designed to emphasize specific management strategies in defined areas such as Recommended Wilderness (5.1), Spruce Communities (4.1), and the Spruce Knob – Seneca Rocks NRA (8.1). Other existing prescriptions were reviewed and updated as part of the Plan revision process. This is one of the six planning decisions to be made in Forest Plan revision. These prescriptions are used for analysis in Chapter 3 of this EIS.

Stream Liming

Adding limestone fines to acidic streams decreases their acidity, allowing aquatic resources to live in streams that would otherwise not support a wide variety of aquatic life. This practice is used by the West Virginia Division of Natural Resources on many streams located on the Forest. The Forest Plan allows for this practice, although there are restrictions on mechanical delivery systems in certain parts of the Forest like Wilderness. Stream liming is considered and evaluated on a site-specific basis at the Division's request.

Forest Habitat Fragmentation

Fragmentation may be caused from implementing Forest management activities. Considering the Forest is in a predominantly closed-canopy condition, there is no current internal concern over fragmentation on a landscape level. Potential fragmentation as a result of management activities is addressed in the EIS as part of the *Terrestrial Ecosystem Diversity* analysis. The Forest reviewed the information in the 1986 Plan and updated language for identification and conservation of old growth or mature habitat in Appendix B to the 2006 Forest Plan.

Pesticide and Herbicide Use

Management direction for the use of pesticides, which includes herbicides, was reviewed and updated for the 2006 Plan (see Vegetation section in Chapter II). Before any pesticide-related project takes place on the Forest, the NEPA process would be used to notify the public and solicit comments, analyze potential effects, determine appropriate mitigation measures, and identify a preferred alternative.

ATV/OHV Use/Recreational Trails

The 1986 Plan allows for ATV use on designated routes. This direction has not changed in the revised Plan. The Forest reviewed and updated recreational trail direction as part of the Plan revision process. Although the Forest currently has no designated routes for ATV use, we do have funding in place to begin comprehensive trail management planning in the near future, independent of the revision process. This trail management planning is designed to look at conflicts and opportunities for trail users, and the need to designate more special purpose trails on the Forest.

Inventoried Roadless Areas

The Forest reviewed and updated its roadless area inventory as part of the Plan revision process. These roadless areas were evaluated for wilderness potential in Appendix C to this EIS. These

areas were also used to formulate a range of wilderness recommendations for the alternatives in Chapter 2 of this EIS. Evaluating roadless areas for Wilderness recommendation is one of the six decisions in Forest Planning. These roadless areas also offer remote backcountry opportunities, which is a major need for change topic that is analyzed in Chapter 3 of this EIS.

Biological Diversity

Biodiversity encompasses life, processes, and their interconnections. Elements of biodiversity are addressed throughout both the 2006 Forest Plan and EIS, and they include such topics as successional stages, invasive species, water, soil, air, disturbance regimes, and forest age class distribution. See also the *Terrestrial Ecological Diversity* analysis in Chapter 3 of this EIS.

Ecosystem Management Approach

The 1986 Plan was reviewed and updated to present a more ecological approach to management. The Forest is considering this an update, not a major NFC topic or issue. Many elements of Ecosystem Management are addressed by the major issues analyzed in Chapter 3 of this EIS.

1986 Forest Plan Amendments

Much of the 1986 Plan has been incorporated into the 2006 Plan, including key components of the six amendments. Direction from the 1986 Plan as amended was considered as Resource Protection Methods for Alternative 1 in the resource assessments in Chapter 3 of the EIS, and the amendments were reviewed and updated as needed.

Forest Health

Defined broadly, forest health encompasses all aspects of forest conditions. Elements of forest health include vegetation age, composition, spatial arrangement, habitat, fire, insects, disease, non-native invasive species, forest growth, forest productivity and sustainability. Many of these aspects of forest health are addressed in the Vegetation Management section in Chapter 3 of this EIS.

Clearcutting

Clearcutting is the removal of all overstory trees within a timber harvest unit, which rarely if ever occurs on the Forest anymore. Reserve trees are left within harvest units to provide for wildlife habitat, shade, or other resource benefits—the amount of trees left depends on the silvicultural objectives for the area. However, the Forest does use even-aged management prescriptions that may remove most of the overstory trees within a unit. These prescriptions are valid tools for regulating age class and species composition, and are used to help display differences in expected outcomes and effects for the EIS alternatives in Chapter 3 of this EIS.

Research Natural Areas (RNAs)

There are no established RNAs on the Forest, but there are candidate RNAs. These areas are classified as Special Areas under an 8.5 Management Prescription. Effects to or from 8.5 Special Areas are evaluated in a number of resource sections in Chapter 3 of this EIS.

A number of candidate RNAs in the 1986 Plan were dropped in the 2006 Plan because: 1) they were designed to preserve relatively small features on the landscape (a bog, a rare plant community, a hawthorn patch) rather than representative forest types or ecosystems, and/or 2) these features were already protected in other prescription allocations such as Botanical Areas and National Natural Landmarks. Areas that preserve specified forest community types (red spruce, yellow poplar, black cherry) were retained in plan revision. In addition, a new candidate RNA (Pike Knob) was identified through public comments. At 1,950 acres, Pike Knob contains oak and red pine forest community types and several rare plant species or communities.