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George Washington
National Forest



2010
George Washington
National Forest

Record of Decision

*Final Environmental Impact Statement
for the Revised Land and Resource Management Plan*



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Final Environmental Impact Statement
Revised Land and Resource Management Plan
George Washington National Forest

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INTRODUCTION

This document is the Record of Decision (ROD) that summarizes the basis and rationale for my decision to revise the George Washington National Forest (GWNF) Land and Resource Management Plan (Revised Forest Plan or Revised Plan) which will provide management direction for approximately 1.1 million acres of land in Virginia and West Virginia. While administratively combined, the George Washington and Jefferson National Forests have separate forest plans. The Jefferson Plan was revised in 2004 and the GWNF Plan was last revised in 1993. This Revised Forest Plan replaces the 1993 GWNF Forest Plan.

The Draft and Final Environmental Impact Statements (FEIS) and associated Revised Plan were developed according to the National Forest Management Act (NFMA) and its implementing regulations at 36 CFR 219 (1982 Planning Regulations)¹, the National Environmental Policy Act (NEPA), the Council of Environmental Quality (CEQ) regulations at 40 CFR 1500-1508, and other Acts and laws. The National Forest Management Act (NFMA) requires all national forests to develop plans that direct resource management activities.

The Revised Plan establishes a framework for future decision-making by outlining a broad, general program for achieving goals, objectives, and desired conditions for the GWNF over the next 10 to 15 years. Once approved by this decision, the Revised Plan is carried out at the "project level" by implementing specific projects at specific locations (such as relocating a trail, prescribed burning, or harvesting timber), over time, ensuring each project is consistent with the guiding direction in the Revised Plan.

The Revised Plan does not direct specific management activities to occur at specific locations, nor does it dictate day-to-day administrative activities needed to carry on the Forest Service's internal operations, e.g., personnel matters, law enforcement, fleet equipment, or internal organization changes.

The FEIS that accompanies the Revised Plan provides analytical data that discloses the environmental consequences of the alternative management strategies considered and discusses how these alternatives respond to issues and concerns.

DECISION

Decision

After consideration of the potential effects of the alternatives disclosed in the FEIS, and as delegated selecting official, I have selected Alternative I that contains two separate decisions: 1) the Revised Forest Plan for the George Washington National Forest; and 2) lands available for oil and gas leasing. The decisions are described below and are supplemented by the maps and information included in the FEIS and the project record. I reviewed the FEIS, supporting analysis in the project record, and public comments in making these decisions.

¹ The current Planning Rule, published on April 9, 2012, at 36 CFR 219.17(b)(3) allows for plan revisions initiated before May 9, 2012 to be revised in conformance with the provisions of the prior planning regulations, including its transition provisions which allow for the use of the 1982 planning regulations (see 36 CFR part 219, published at 36 CFR parts 200 to 299, revised as of July 1, 2010).

Components of the Decision

As described above, the FEIS and Revised Plan were developed according to the National Forest Management Act (NFMA) and its implementing regulations, 36 Code of Federal Regulations (CFR) 219 (1982 regulations).

The Revised Plan, based on Alternative I, 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. The FEIS discloses the environmental consequences of the alternative management strategies and how they respond to the issues. Primary components of the Revised Plan include:

1. Management direction and associated long-range goals, desired conditions, and objectives for the next 10-15 years. This direction provides for multiple use and sustained yield of the products and services people use from the Forest, including outdoor recreation, range, timber, water, wildlife, fish, and wilderness. The Revised Plan establishes this direction in Chapters 2 and 3 [36 CFR 219.11(b)].
2. Management areas that reflect biological, physical, watershed, and social differences and management prescriptions that reflect different desired conditions. Management areas and prescriptions are described in Chapter 4 of the Revised Plan and are displayed on a map enclosed with the Revised Plan [36 CFR 219.11(c)].
3. Standards that set the sideboards for achieving goals, objectives, and desired conditions when implementing projects. The Revised Plan contains standards that apply across the GWNF as a whole and those that apply to specific areas of the Forest. These are described in Chapter 4 [36 CFR 219.11(c), 219.13 to 219.27].
4. Lands suitable for different types of uses, including lands that are suitable for timber production, and the establishment of the Allowable Sale Quantity (ASQ) of timber to ensure a sustained yield of wood products in perpetuity. The suitability of lands for different uses on the Forest is described by management prescription area in Chapter 4 and is summarized in Chapter 3 of the Revised Plan [16 USC 1604(k), 36 CFR 219.14]. The ASQ is determined to be 5.5 million cubic feet (27.6 million board feet) per year for the first ten years [16 USC 1611, 36 CFR 219.16] and there are 452,000 acres of land suitable for timber production.
5. Two new stand-alone areas (Little River-9,500 acres and Beech Lick Knob-5,700 acres) and four additions to existing wildernesses (Rich Hole-4,600 acres, Ramseys Draft-6,100 acres, Rough Mountain-1,000 acres, and Saint Mary's-300 acres) are recommended for congressional designation as Recommended Wilderness [36 CFR 219.17]. Shenandoah Mountain Recommended National Scenic Area is also recommended for congressional designation. This area is approximately 90,000 acres in size (including about 6,000 acres of existing Wilderness and about 15,000 acres of Recommended Wilderness). These areas are described further in Chapter 4 of the Revised Plan. It should be noted here that these recommendations are preliminary administrative recommendations that will receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. The Congress has reserved the authority to make final decisions on wilderness designation. There are no new Research Natural Areas identified [36 CFR 219.25]. River segments eligible for inclusion in the National Wild and Scenic Rivers System are identified in Chapter 4 [PL 90-542, 36 CFR 219.2(a)].
6. Monitoring and evaluation requirements are identified to ensure that the direction in the Revised Plan is carried out and to determine how well outputs and effects were predicted. These requirements are contained in Chapter 5 of the Revised Plan [36 CFR 219.11(d)].

7. A separate decision is made concerning lands administratively available for oil and gas leasing [36 CFR 228.102(d)]. The approximately 51,000 acres that are congressionally withdrawn from mineral entry (i.e., Wilderness and the Mount Pleasant National Scenic Area) will continue to be legally unavailable for federal oil and gas leasing. The approximately 10,000 acres of mineral rights under current federal oil and gas leases will continue to be legally available for federal oil and gas leasing (although none of these are currently active). All other areas of the GWNF are administratively unavailable for federal oil and gas leasing at this time. In total, about 1,056,000 acres are unavailable for federal oil and gas leasing. This decision does not affect the approximately 167,200 acres (or 16 percent of the GWNF) of subsurface mineral rights owned by private parties (also called outstanding or reserved) that are available by law.

Highlights of the Selected Alternative – Alternative I

Alternatives H and I were added to the FEIS after the Draft EIS was released and are the same except for the decision on lands available for oil and gas leasing. Alternative I incorporates much of the direction on oil and gas leasing availability in Alternative C. Oil and Gas leasing is the same in Alternatives I and C in that all areas are administratively unavailable except for lands that have private (outstanding or reserved) mineral rights, lands under current oil and gas lease, or lands that are legally unavailable (Wilderness and Mount Pleasant National Scenic Area). The difference between Alternatives I and C is that Alternative I allows those lands currently under lease to remain available for leasing after the current leases expire, terminate or are relinquished. In total under Alternative I, 1,056,000 acres of the 1,066,000-acre GWNF federal mineral estate are unavailable for oil and gas leasing.

The following are highlights of my selected alternative, arranged by significant issue:

Water, Soils, Riparian, Aquatic Diversity

As one of the largest land managers in the Chesapeake Bay watershed, the GWNF continues the Weeks Act tradition of watershed restoration, protection and stewardship to provide high quality water for Forest uses and for downstream water users.

- Riparian Corridors are increased in width as on the Jefferson National Forest (100' on perennial, 50' on intermittent streams) in all watersheds.
- Priority watersheds are identified for restoration activities.

Terrestrial Diversity, Fire, Timber, Old Growth and Forest Health

An important feature of the GWNF is the large blocks of forested land situated within a landscape of developed and developing private lands. To help determine vegetation management needs on the GWNF twenty-four native ecosystems were identified and these were combined into nine ecological system groups. Desired conditions and objectives were developed for these groups. Management to meet the ecosystem objectives will allow the GWNF to maintain and improve ecosystem diversity, provide for the needs of diverse plant and animal species on the Forest, and provide management direction to support viable populations of native and desirable plants, fish and wildlife. Special Biological Areas, where the primary goal is to restore and maintain rare communities or unique assemblage of rare species, are increased. The mature and late successional stages of forests are well represented across the GWNF; however, grassland, shrubland, regenerating forest, and open woodland conditions are lacking. Objectives to meet these needs include increasing the annual prescribed burning program and the annual timber harvest. Prevention and control of non-native invasive species is another key component of restoring these ecological systems.

- One broad management area prescription is established for wildlife habitat emphasis.
- About 121,000 acres are identified as Special Biological Areas (including the Shenandoah Mountain Crest area for the Cow Knob salamander).

- The prescribed fire program objective is to burn between 12,000 and 20,000 acres per year.
- Direction is established to allow wildfire to attain ecological objectives for biodiversity when appropriate.
- The annual timber regeneration objective is 1,800-3,000 acres with an Allowable Sale Quantity of 5.5 million cubic feet (MMCF).
- About 452,000 acres of land are identified as suitable for timber production.
- The primary purpose of timber harvest is to support other resource objectives with a secondary purpose of providing wood products.
- Old growth is defined by Regional definitions (See Forest Plan Appendix B).
- Most of the stands with old growth forest types meeting the old growth definition are unsuitable for timber production. Areas in the common forest types (Dry-Mesic Oak Forests and Dry & Dry-Mesic Oak-Pine Forests) on lands suitable for timber production could be considered for harvest.
- The Peters Mountain and Frozen Head areas (boundaries modified from the Virginia Department of Conservation and Recreation proposal) are identified as Key Natural Heritage Community Areas for old growth and are unsuitable for timber production.
- Direction for aggressive treatment of non-native invasive species using Integrated Pest Management techniques, an emphasis on minimizing spread to adjacent private lands, and prevention and control in disturbed areas or high use areas is established.

Climate Change

The Template for Assessing Climate Change Impacts and Management Options (TACCIMO) tool provided the scientific basis for guiding our climate change strategies. The strategies focus on both adaptation (ways to maintain forest health, diversity, productivity, and resilience) and mitigation (such as carbon sequestration by natural systems, ways to provide renewable energy to reduce fossil fuel consumption). These strategies reduce vulnerability by maintaining and restoring resilient native ecosystems, providing watershed health, and reducing existing stresses like non-native invasive species and acidification of streams and soils. Details are included in the water and terrestrial diversity sections.

Wilderness/Roadless/National Scenic Areas

Plan direction increases the total area managed for remote settings. About 80% of the areas identified by wilderness advocates are assigned management prescription areas that manage for the remote characteristics of the areas.

- Two new areas (Little River and Beech Lick Knob) and four additions to the currently designated wildernesses (St. Mary's, Rough Mountain, Rich Hole, and Ramseys Draft) are Recommended Wilderness, a total of about 27,000 acres.
- Shenandoah Mountain is recommended for national scenic area designation. This area of 90,000 acres includes about 6,000 acres of existing wilderness and about 15,000 acres of Recommended Wilderness.
- All Inventoried Roadless Areas that are not allocated to Recommended Wilderness or Special Biological Areas are allocated to Remote Backcountry Areas. All of these areas are managed with timber harvest and road construction restrictions that are consistent with the 2001 Roadless Area Conservation Rule.

- Of the 148,000 acres of potential wilderness areas that are not in Inventoried Roadless Areas, about 50,000 acres are allocated to Recommended Wilderness, Remote Backcountry Areas and a Recommended National Scenic Area. About 80,000 acres that have road access are allocated to Mosaics of Habitat Management. The remaining acres are scattered among other prescriptions.

Recreation and Access

Increasing development adjacent to the GWNF will result in more demands for sustainable recreation. Alternative I ensures that resource management is designed to attract recreation users, both locally and from large population centers near the Forest. A variety of recreation settings and experiences, both motorized and non-motorized are provided. Large blocks of unroaded areas continue to provide remote, backcountry experiences not available on private lands. High scenic quality remains a major emphasis. The focus is on improving long-term trail sustainability, targeting high-use areas near larger urban population centers, and retaining the current all-terrain vehicle (ATV) systems and the amount of roads available for off-highway vehicle (OHV) use. Road recommendations are based on a Travel Analysis Process. The goal is a road system that is financially and ecologically sustainable.

- Direction is for no net increase in trail maintenance with a focus on relocating or decommissioning unsustainable trails, decommissioning low use trails, adding stacked loops within existing trail systems, providing connectors between existing trails, and, if feasible, providing trailheads near population centers and/or major road routes.
- The three existing ATV and OHV Use Areas continue and additional trails within the areas can be expanded, but the Archer Run area planned in the 1993 Plan will not be developed.
- High clearance roads remain available for OHV use at current levels.
- No new developed recreation sites are planned, but some existing sites could be expanded.
- There will be no net increase in open road miles.
- There is an objective to decommission 16 miles of road per year. An additional 4 miles of road will be decommissioned if all Recommended Wilderness become designated by Congress.
- A small amount of new road construction (averaging around 1.5 miles per year) will be needed for management activities, but the net effect will be a reduction in total miles of road.

Energy Development (Wind and Oil and Gas)

Any proposal for development of wind energy will be addressed on a case-by-case basis. The Revised Plan identifies areas that are not suitable for such development:

- Wilderness, Recommended Wilderness, Eligible Scenic River Corridors, Eligible Recreation River Corridors, Appalachian Trail Corridor, Research Natural Areas, Special Geologic Areas, Special Biological Areas, Key Natural Heritage Community Areas, Cultural Areas, Mount Pleasant National Scenic Area, Shenandoah Mountain Recommended National Scenic Area, Scenic Corridors and Viewsheds, Developed Recreation Areas, Blue Ridge Parkway Scenic Corridor, Shenandoah Mountain Crest-Cow Knob Salamander Area, Indiana Bat Protection Areas, and Remote Backcountry Areas.

The Revised Plan identifies suitability and standards for oil and gas development and this Record of Decision also makes the decision of which lands are administratively available for oil and gas leasing. With the exception of lands with existing leases, the National Forest System land on the

GWNF with a federal mineral estate will not be available for federal oil and gas leasing. The FEIS illustrates that adverse impacts from oil and gas development may be mitigated, but there appears to be insufficient reason at this time to make any federal lands available for oil and gas development (aside from the existing leases and areas of private mineral rights).

BACKGROUND

Purpose and Need for Action

The regulations implementing the National Forest Management Act of 1976 (NFMA) instruct the Regional Forester to make periodic revisions to forest plans and to provide the basis for any revision. The purpose for revising the Forest Plan for the George Washington National Forest is to:

- Guide resource management activities on the Forest for the next 10 to 15 years;
- Address changed conditions and direction since the 1993 Plan was prepared;
- Assure the production and protection of high quality water for Forest uses and for downstream water users;
- Maintain or restore long-term ecosystem health and integrity;
- Contribute to the economic and social needs of people, cultures and communities;
- Meet the objectives and requirements of federal laws, regulations, and policies;
- 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.

The need for this proposed action is to meet the intent of 36 CFR 219.10(g) that land management plans are ordinarily revised on a 10 to 15 year cycle. Since the Forest Plan for the GWNF was last revised on January 21, 1993, changes have occurred in resource conditions, environmental stresses and threats, societal demands, and our current state of scientific knowledge.

Changes that were needed in management direction include:

- Better definition of desired conditions and objectives to maintain the resilience and function of identified ecological systems and determination of the desired structure and composition of those ecosystems;
- Management direction to provide habitat for maintaining species viability and diversity across the Forest;
- Evaluation of new or expanded Special Biological Areas to protect and restore rare communities and species;
- Recognition of the role of fire as an essential ecological process;
- Management direction for controlling, treating or eradicating non-native invasive plants and animals;
- Direction for management of old growth to meet guidance for the Southern Region;
- Strategies for addressing climate change;
- Evaluation of riparian area protection to incorporate the best available science;
- Re-evaluation of the oil and gas leasing availability designations;

- Identification of uses suitable for specific areas of the Forest (e.g. timber production, road construction, wind energy development, salvage harvest);
- Determination of the Allowable Sale Quantity of timber and identification of acres suitable for timber production;
- Evaluation of road access needs;
- Evaluation of the appropriate mix of recreational experiences that is sustainable and responsive to user demands;
- Evaluation of areas for recommendation of congressional designation, such as wilderness or national scenic area; and
- Determinations of the mix of vegetation management tools (where, how much, what type) by which the desired conditions and objectives for ecological health and sustainability can be accomplished.

Public Involvement and Alternative Development

The Forest embarked on a collaborative effort with our partners and with other individuals and organizations to identify the issues, develop options to address these issues, and develop a revised plan to manage the GWNF for the next planning period.

The Forest held a variety of workshops between 2007 and 2011. Workshops generally began with a presentation about the workshop topic. Then the participants broke into small groups for a facilitated discussion of one or two questions designed to explore the topic. This process allowed the participants to get to know each other, and the Forest staff, in a forum that encouraged open discussion of differing opinions.

In March 2007 we held seven workshops to determine what participants liked about the current management plan and what they wanted to change. In July of 2008 we held five workshops to go into greater detail by working around Forest maps to describe specific areas of concern. From these workshops we identified three major topic areas and held workshops to discuss: 1) wilderness and roadless area management; 2) vegetation management; and 3) road and trail access. Then in January 2009 we held two workshops to present for discussion our preliminary options to address the needed changes.

Through those collaborative workshops and interaction with partner agencies and members of the public, we identified a need to:

- Update the Plan with new science on restoration, ecological processes, and climate change;
- Update the Plan with new direction on energy development and the effects of adjacent development pressures; and
- Review the issues of water quality, vegetation management, access and wilderness/roadless.

We found agreement that:

- Water is critical (on both NFS lands and private lands);
- We need to restore and maintain ecosystems;
- We need resilient systems to withstand impacts of climate change and adjacent land development;
- We need to maintain the highly valued remote settings while we address our ecological needs;

- We need sustainable access to the Forest;
- We need to address energy development opportunities;
- All of these issues can only be addressed through continued interaction with our partners; and
- All of these issues are important to sustain our local communities.

Near the end of 2009, the court vacated the 2008 planning rule and the Forest returned to the 1982 planning regulations to complete the plan revision. We issued a Notice of Intent to prepare an Environmental Impact Statement (EIS) in March 2010 and held scoping meetings in April 2010. As we developed the range of alternatives to address the issues, we held public workshops in July and October to present the status of seven alternatives and discuss criteria for selecting a preferred alternative.

The Draft EIS and Draft Revised Plan were released for public review and comment: the Notice of Availability was published in the Federal Register on June 3, 2011 with a 90-day comment period ending September 1, 2011. The comment period was extended to October 17, 2011. Six public workshops were held during the comment period to present the Draft Plan, answer questions about the Plan and EIS and accept comments on these documents. By the end of the comment period, we received about 600 letters and an additional 53,638 comments through 24 separate campaigns of postcards, e-mails, and petitions. All of these comments were reviewed and considered in completing the final EIS and Revised Plan.

Comments were received in response to each of the issues. Most of the comments on the Draft Plan and Draft EIS were in support of the prohibition on horizontal drilling. Comments opposed to the prohibition were received that included information on the past safety record of gas drilling, the potential to increase jobs and income, and suggestions on mitigation measures to reduce potential impacts. Many comments also addressed the level of wilderness and national scenic area recommendations, the level of vegetation management, options on wind energy development, management of old growth and special biological areas, and road and trail access.

During the period between the issuance of the Notice of Intent and the release of the draft documents, a group of stakeholders independently formed to cooperatively develop an alternative addressing their collective issues. This GWNF Stakeholders Group included: The Nature Conservancy, Southern Environmental Law Center, Sierra Club, Virginia Department of Game and Inland Fisheries, Southern Appalachian Forest Coalition, National Wild Turkey Federation, Ruffed Grouse Society, International Mountain Bicycling Association, Virginia Wilderness Committee, Virginia Forestry Association, Trout Unlimited, Shenandoah Mountain Touring, Friends of Shenandoah Mountain, Virginia Forest Watch, Shenandoah Valley Bicycling Coalition, Mount Pleasant Forestry, Greif Packaging, Virginia Loggers Association, Quality Deer Management Association, and other groups. These organizations worked closely over a period of months, and most signed an agreement that was submitted to the Forest Service that recommended specific changes to the Draft Revised Plan. The agreement included a recommended level of vegetation management, recommendations for additional wilderness and a national scenic area, and recommendations on management of potential wilderness areas. The Forest Service considered these recommendations and adopted many of them.

An eighth alternative, Alternative H, was developed with the assistance of the Bureau of Land Management in response to the comments received during the comment period on the Draft Plan and EIS. It included additional wilderness recommendations and recommendation of a national scenic area. Alternative H also addressed the issue of adopting additional constraints to allow some level of gas development with horizontal drilling and the issue of taking a closer look at potential impacts from vertical drilling. Alternative H varied from other alternatives in that it identified lands as

administratively available in the Marcellus shale area only. Lands outside of areas underlain by the Marcellus shale would be administratively deferred for leasing (including the Pedlar and Lee Ranger Districts, the Walker Mountain area of the North River Ranger District, and the Warm Springs Mountain and Back Creek Mountain portions of the Warm Springs Ranger District). Alternative H removed the following areas from leasing: public water supply watersheds, Wilderness and Recommended Wilderness, Mount Pleasant National Scenic Area and Recommended National Scenic Areas, the Laurel Fork area, and Indiana Bat Primary Cave Protection Areas. Special Biological Areas and Remote Backcountry Areas would only be available with no surface occupancy. Under Alternative H: 51,000 acres would be legally unavailable for leasing; 128,000 acres would be administratively unavailable for leasing (for a total of 179,000 acres unavailable for oil and gas leasing); 416,000 acres would be administratively deferred for leasing; 137,000 acres would be available for leasing with a No Surface Occupancy (NSO) stipulation; 88,000 acres would be available for leasing with Controlled Surface Use stipulations; 236,000 acres would be available for leasing using the Standard Lease Terms; and 10,000 acres are currently under lease. Alternative H also added standards required for approval of Surface Use Plans of Operations with Applications for Permits to Drill: (a) no withdrawal of surface water or groundwater from NFS lands; (b) only closed loop systems for hydraulic fracturing; (c) removal of drill cuttings from the drill site and disposal at approved sites off NFS lands; (d) secondary containment infrastructures; (e) no surface disposal of flowback water or produced waters; and (f) treatment of any non-native invasive species introduced at the site. Alternative H also modified a current standard to prohibit well pads from riparian areas; added a forestwide standard requiring disclosure of chemicals used by commercial operators working under the authority of Forest Service issued permits; and utilized existing direction for general operations (Gold Book, American Petroleum Institute, EPA air regulations, monitoring and inspection by USFS/BLM/State, forestwide Revised Plan direction).

After completing the analysis of Alternative H, all of the alternatives were evaluated in relation to the issues, public comments, current information and discussions about energy development in relation to the GWNF. Currently, there appears to be an apparent lack of interest in gas development as evidenced by the fact that both existing federal leases on the Forest and existing mineral rights owned by private parties are not active. There are concerns expressed by local citizens, their elected officials, and many other interested parties regarding potential impacts of gas development. Throughout our planning process, we have seen changes in drilling technology, changes in the research on potential impacts of drilling, changes in regulations on drilling, and many studies that are ongoing and not complete. In response to these considerations, an alternative was developed that included all of the forest plan components of Alternative H, but combined that with the lands available for oil and gas leasing component (except those currently under lease) of Alternative C. This resulted in Alternative I that would make no lands available for oil and gas leasing beyond those currently under lease.

Alternatives Considered

Nine alternatives were considered in detail from the FEIS as summarized below, as well as several other alternatives that were not carried forward into detailed analysis.

Alternative A – “No Action” Alternative

Alternative A represents the 1993 Forest Plan. In this situation, ‘no action’ means no change from the current management direction and it provides the baseline for the effects analysis in the EIS. The 1993 Forest Plan provides a variety of resource benefits, including wood, wildlife, fish, range, dispersed recreation, developed recreation, minerals, wilderness and special uses, in a manner that maintains the diversity, productivity and long-term sustainability of ecosystems. Maintaining biological diversity is a major goal with standards designed to conserve specific elements of biodiversity and restore others. Conservation of biodiversity is an integral part of sustaining multiple uses of the Forest. Currently, most of the Forest is available for gas leasing (about 995,000 acres).

Alternative B

This alternative is based on changes to the 1993 Forest Plan as identified in the Analysis of the Management Situation. That analysis was based on a Forest Interdisciplinary Team evaluation of the 1993 Forest Plan direction, monitoring and evaluation results, new policies, new science and an attempt to balance public issues that were identified as of March 2010. The need to change items included the following: (1) identify desired conditions and objectives to maintain the resilience and function of ecological systems, determine the desired structure and composition of those ecosystems, and incorporate management direction to provide habitat for maintaining species viability and diversity across the Forest; (2) substantially increase the objective for using prescribed fire in ecosystem restoration and incorporate the use of wildfire for resource enhancement; and (3) manage Remote Backcountry Areas with standards aligned with the management restrictions that are described in the 2001 Roadless Area Conservation Rule, except to allow some salvage of dead and dying trees and allow active management in portions of some areas (about 8,000 acres) that have been actively managed for many years. Over 90% of the Forest would be available for gas leasing, with a moratorium on horizontal drilling and additional stipulations to reduce potential impacts from drilling.

Alternative C

In this alternative, restoration and maintenance of sustainable ecological systems would be accomplished predominantly through natural processes, with little human intervention. It also addresses the need for non-motorized recreation opportunities. This alternative emphasizes low-impact activities and passive restoration of natural communities at a slow rate. Active management would be for the protection of Forest resources and meeting legal requirements, with limited exceptions. Recreation emphasis is on providing for semi-primitive settings and opportunities. This alternative features the most areas Recommended for Wilderness. The forest character would be of a landscape evolving through successional stages toward a natural-evolving appearance. This alternative would also emphasize linking together movement corridors and large undisturbed areas for forest interior species and late-successional species. Effects of native insects and diseases would be accepted but non-native species would be controlled. Road network mileage would be reduced through closure or decommissioning of roads not needed for ecosystem stewardship, restoration or dispersed recreation use. Many of the closed roads would be used to supplement the trail system for non-motorized uses. No new federal lands would be available for gas leasing.

Alternative D

In this alternative, restoration and maintenance of natural ecological systems would use practices that also produce a higher level of commodities and offer amenities that enhance tourism for local communities that benefit economically from forest visitors and forest products. This alternative would have the highest level of timber production. Mineral leasing decisions would respond to public need and maximize benefits to local communities. Mitigation measures for the effects of climate change could be met through providing opportunities for alternative energy, such as wind power, natural gas, timber and wood biomass energy. Public access would be increased in high-use areas and/or improved to provide for more opportunities for recreation and other forest uses. Habitats would be provided for game species, species with high public interest, species with demanding habitat requirements, species that are ecological indicators and keystone species. Management direction would support special use requests for facilities or developments that enhance economic development for local communities, such as communications towers or non-commercial wind towers. Over 90% of the Forest would be available for gas leasing, with a moratorium on horizontal drilling and additional stipulations to reduce potential impacts from drilling.

Alternative E

Alternative E would actively restore and maintain vegetative compositional and structural conditions needed to provide for a variety of terrestrial and aquatic species in certain areas of the Forest. Prescribed fire, timber harvest and maintenance of grasslands and shrublands would all be used to provide a diverse mix of habitats. In some areas of the Forest, large blocks of mature forest would predominate. Alternative E emphasizes improving soil and water conditions in high priority watersheds. As a result of restoration treatments, commodities such as sawlogs, wood biomass energy, and fuelwood would be available for local industry and individual needs. Restoration activities such as prescribed fire and thinning would be more intensive than in the other alternatives. A variety of recreation settings would occur in areas compatible with restoration activities. New recreation developments would be limited; the emphasis is on maintaining existing developments. Over 90% of the Forest would be available for gas leasing, but horizontal drilling would not be allowed.

Alternative F

This alternative would restore and maintain the native ecological systems while also creating many opportunities for a variety of recreation settings. The emphasis is on recreation opportunities, scenery management, and wilderness designation, while focusing ecosystem health activities in support of wildlife-based recreation. Resource management is designed to attract recreation users, both locally and from large population centers near the Forest. A variety of recreation settings and experiences, both motorized and non-motorized would be provided. Developed recreation facilities would support dispersed recreation by providing access to water-based recreation, trailheads, cultural resource interpretation, and horse staging areas. In addition to open roads available for use, specific off-highway vehicle routes would be featured as in the 1993 Forest Plan. Large blocks of unroaded areas would provide remote, backcountry experiences not available on private lands. Habitat for early successional species would be maintained in a manner that would be unnoticeable to most forest visitors. High scenic quality would be a major emphasis. Active resource management would be concentrated in certain locations and support recreation use and visual quality. Over 70% of the Forest would be available for gas leasing with a moratorium on horizontal drilling, additional stipulations to reduce impacts from drilling, and no horizontal drilling allowed within public water supply watersheds.

Alternative G

Alternative G was identified as the Preferred Alternative in the Draft EIS.

This alternative would actively restore and maintain vegetative compositional and structural conditions needed to provide for a variety of terrestrial and aquatic species in certain areas of the Forest. Habitats would be provided for game species, species with high public interest, species with demanding habitat requirements, species that are ecological indicators and keystone species. It would substantially increase the objective for using prescribed fire in ecosystem restoration and incorporate the use of wildfire for resource enhancement. Prescribed fire, timber harvest and maintenance of grasslands and shrublands would all be used to provide a diverse mix of habitats in the ecological systems. In some areas of the Forest, large blocks of mature forest would predominate. Restoration treatments would focus on increasing structural diversity in ecological systems and on improving soil and water concerns in high priority watersheds. As a result of restoration treatments, commodities such as sawlogs, wood biomass energy, and fuelwood would be available for local industry and individual needs. Road network mileage would be reduced through closure or decommissioning of roads not needed for ecosystem stewardship, restoration or dispersed recreation use. Closed roads could be used to supplement the trail system for non-motorized uses. A variety of recreation settings and experiences, both motorized and non-motorized would be provided. Large blocks of unroaded areas would provide remote, backcountry experiences

not available on private lands. Over 90% of the Forest would be available for gas leasing, but horizontal drilling would not be allowed.

Alternative H

Alternative H was developed after the review of public comments received following release of the Draft EIS. It is based on Alternative G with changes made in response to the comments (including hydraulic fracturing) and additional analyses. It has the same description as Alternative G with the following major differences. Alternative H recommends more Wilderness and a National Scenic Area on Shenandoah Mountain for congressional designation. It removes the following areas from leasing: public water supply watersheds, existing and recommended Wilderness, existing and recommended National Scenic Areas, the Laurel Fork area, and Indiana Bat Primary Cave Protection Areas. Special Biological Areas and Remote Backcountry Areas would only be available with no surface occupancy. It identifies about 44% of the Forest as available for gas leasing and includes horizontal drilling with high-volume hydraulic fracturing (HVHF). It also identifies Scenic Corridors and Viewsheds as unsuitable for industrial wind development.

Alternative I – The Selected Alternative

Alternative I was also developed after the release of the Draft EIS and after a further consideration of the effects and consequences of Alternatives A-H, the project record, and public comments. Alternative I was developed from combining parts of Alternatives C and H. Alternative I is the same as Alternative H except for the decision on lands available for oil and gas leasing. For the decision on lands available for oil and gas leasing, Alternative I uses the approach for administrative availability of Alternative C except for those lands currently under lease.

Alternatives Considered but Eliminated from Detailed Study

Some comments were made that alternatives should be developed that maximize certain resources, such as timber, or resource management activities. Given that the purpose of this analysis is to revise a current Forest Plan that is designed to continue to meet the multiple use mandate, maximization of resources at the expense of other resources does not meet the purpose and need. However, the benchmark analyses addressed in the Analysis of the Management Situation do identify some of the potential benefits and tradeoffs from maximizing certain outputs.

Some comments were also made to consider an alternative that involves no management on the Forest, to let natural processes dominate without human intervention. This alternative was not considered in detail because it could not meet the purpose and need identified in Chapter 1 and it could not meet legal requirements of the National Forest Management Act of 1976, the Multiple-Use Sustained-Yield Act of 1960 and the Endangered Species Act of 1973. However, Alternative C does consider a low level of management activities and is considered in detail.

Some comments expressed a desire to see a much higher level of timber production, in order to provide wood products and early seral conditions for wildlife. Although the GWNF is capable of providing a higher level of sustained timber production (as shown in the FEIS Maximum Timber Volume Benchmark in Appendix B), this alternative was not considered in detail, due to concerns about our implementation capabilities and impacts on other resources.

Another alternative was proposed to represent the actual accomplishments achieved during implementation of the current plan over the last 21 years. Since many aspects of the current plan were not achieved during that time (such as the level of timber harvest or the level of construction of recreation facilities), this alternative might reflect a more realistic level of management activity. This alternative would be different from Alternative A which represents the 1993 Forest Plan direction if it had been fully implemented. Rather than developing a separate alternative, the analysis in the EIS includes the places where Alternative A differs between its direction and its implementation.

RATIONALE FOR DECISION

The decision to select Alternative I was based on a thorough review of the FEIS, the project record, and public comments. Considerations included how well the alternative components would meet the purpose and need for action. Also considered was to what degree the alternatives addressed thirteen significant issues and used the alternative evaluation criteria developed to identify the preferred alternative in the Draft EIS.

Significant Issues:

1. Watersheds, Soil and Water Quality, Riparian Resources and Aquatic Diversity
2. Terrestrial Biological Diversity
3. Fire
4. Old Growth
5. Climate Change
6. Forest Health
7. Recreation
8. Access
9. Wilderness and Roadless Areas
10. Economics and Local Communities
11. Timber Harvest
12. Wind Energy
13. Oil and Gas Leasing

Alternative Evaluation Criteria:

Criterion 1: The extent to which the alternative maintains or restores water quality and the soil productivity necessary to support ecological functions in upland, riparian, and aquatic areas.

Criterion 2: The extent to which 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 and endangered species.

Criterion 3: The extent to which the alternative maintains the resiliency of the ecological systems in relation to future changes such as increased development adjacent to the Forest, climate change, and increased demand for ecosystem services and products from the Forest.

Criterion 4: The extent to which the alternative maintains or restores forest vegetation to ecological conditions with reduced risk of damage from fires, insects, diseases, and invasive species.

Criterion 5: The extent to which the alternative provides settings for a variety of recreation opportunities.

Criterion 6: The extent to which the alternative provides a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.

Criterion 7: The extent to which the alternative addresses issues raised by Forest staff, partners, and the public.

Evaluation of Alternatives for the Forest Plan Decisions

The following discussion, organized by the subject of the significant issues, provides the rationale for why Alternative I is the alternative that best responds to the above evaluation criteria and best addresses those significant issues.

Watersheds, Soil and Water Quality, Riparian Resources and Aquatic Diversity

ISSUE STATEMENT: Management activities may affect soil quality, water quality (surface and groundwater) and riparian resources, including drinking water watersheds and those watersheds with streams impaired due to activities off the Forest. Management activities may affect the maintenance and restoration of aquatic biodiversity and may affect species with potential viability concerns.

BACKGROUND: Providing favorable flows of water was the main objective of the Organic Administration Act that created the forest reserves and of the Weeks Act that allowed the purchase of lands for national forests in the eastern United States. Water continues to be one the most important resources produced on the Forest. A number of communities in Virginia and West Virginia obtain their drinking water from the GWNF, whether their water supply watershed is completely within the Forest boundary or their supply is a river that is downstream from the Forest. The Forest is also an important component of the Chesapeake Bay watershed. There are streams within and downstream of the Forest that have impaired water quality. Most of these impairments are due to acid deposition or to agriculture and none has been attributed to management activities on the Forest. Water quality and aquatic systems can be affected by acid deposition, roads, trails, past storm events, insects and disease, non-native invasive species and other disturbances. Streams on the Forest provide habitat for a number of species at risk, including brook trout and the James spinymussel. Currently, the biggest concerns for aquatic habitats on the Forest are sedimentation, future sources of large woody debris for self-maintaining diverse habitat components, canopy cover to maintain water temperature regimes, impacts from roads, and acidic deposition.

RATIONALE: Protecting and providing water resources is one of the primary functions of the national forest and this was one of the most frequent comments heard during the planning process. Due to the importance of water, all alternatives provide a high level of protection of water quality. All of the alternatives, except for the No Action alternative (A) and Alternative D, increase the width of the riparian corridor to protect both water quality and the critical ecological values of these areas to terrestrial plants and animals. These alternatives also have improved standards to protect aquatic and terrestrial components of the riparian corridors. The Revised Plan recognizes riparian corridors as one of nine ecological systems and has a management area prescription specific to their protection and management.

There is little difference between Alternatives B, C, E, F, G, H, and I in regard to plan direction for water and aquatic resources. This was done deliberately to ensure protection of these resources under all circumstances. Many people commented that some watersheds (water supply watersheds, impaired watersheds, and/or watersheds that support rare species) should have additional standards. We identified a high level of protection for all riparian areas since all of our streams contribute to water supplies in West Virginia and Virginia. We also require a high level of water quality to protect all aquatic organisms.

Alternative C has a much lower level of management activities and so would result in less soil disturbance and a lower potential for erosion and sedimentation than the other alternatives. Alternative C also decommissions more mileage of roads, further reducing potential sedimentation. Alternatives A, B, D, E, F, G, H and I have similar levels of soil disturbance from implementation of management activities. However, I believe that the riparian standards and the standards controlling other activities will allow us to implement the management activities in the other alternatives in a manner that effectively minimizes impacts to water quality and soil productivity.

In Alternatives H and I, 30 public drinking water supplies on the Forest are identified and desired conditions are established to recognize the importance of protecting water quality in these watersheds. Priority watersheds are those watersheds with sensitive aquatic species, impaired water quality, and watersheds providing drinking water. Road recommendations based on the Travel

Analysis Process include decommissioning about 160 miles of road and reducing road maintenance levels on much of the road system. Priorities for decommissioning are roads causing resource damage and roads in priority watersheds. Protection of the aquatic systems and riparian areas would be accomplished through expanding the width of the riparian protection corridors and changing the standards to match the protections of the Federally Listed Threatened and Endangered Mussel and Fish Conservation Plan used on the Jefferson National Forest. Riparian standards meet or exceed Virginia and West Virginia Best Management Practices. In all alternatives, with the exception of Alternative C that does not have lands suitable for timber production, woody biomass utilization is limited on soils identified as high risk for soil acidification and nutrient depletion due to atmospheric deposition. While Alternative C best meets Criterion 1 for protecting water quality and soil productivity, it does so at the expense of needed ecological restoration activities and needed activities to provide for recreation and other products, like timber, that benefit local communities. Of the alternatives that include restoration activities, Alternative I best meets Criterion 1.

Terrestrial Biological Diversity

ISSUE STATEMENT: Forest Plan management strategies may affect the maintenance and restoration of the diverse mix of terrestrial plant and animal habitat conditions and may affect species with potential viability concerns.

BACKGROUND: Ecological communities provide the foundation for biological diversity. Ecosystems identified on the Forest include ecological communities that predominate on the landscape (e.g. Central Appalachian Dry Oak-Pine Forest); communities that are declining, rare, or unique (e.g. Caves and Karstlands); and communities that provide habitat for species with potential viability concerns (e.g. Special Biological Areas). The analysis of ecological and species sustainability is built on the principles of restoring and maintaining the key characteristics, conditions, and functionality of native ecological systems. Twenty-four native ecosystems were identified for the GWNF that were combined into the following nine ecological system groups: Spruce Forests; Northern Hardwood Forests; Cove Forests; Oak Forests and Woodlands; Pine Forests and Woodlands; Alkaline and Mafic Glades and Barrens; Cliff, Talus and Shale Barrens; Floodplains, Wetlands and Riparian Areas; and Caves and Karstlands.

The Forest utilized the Ecological Sustainability Evaluation tool developed by the Southern Region based on methods used by The Nature Conservancy. This is based on a "coarse filter and fine filter" approach to identify ecological systems and species-specific habitat needs. Most species needs are covered by direction for managing the nine ecological system groups (coarse filter). However, in some circumstances, additional standards and strategies were incorporated into the Plan to address supplementary needs for some species (fine filter). A total of 295 species were addressed in this analysis. These species were placed in groups based on similar habitat needs or on similar management requirements. For example, some of these groups represent species associated with rare communities that are protected through management of Special Biological Areas; butterflies and moths that need protection from gypsy moth treatments; species that need grasslands of a particular size or level of active management; or species that need cavities or den trees. Stresses and threats were identified and plan components were developed to address those stresses and threats. Key attributes and indicators were identified for each of the species groups to develop plan direction.

We also relied heavily on LANDFIRE descriptions of our ecosystems, and closely coordinated with State partners regarding their Wildlife Action Plans and their Statewide Forest Resource Assessments and Strategic Plans to link our plan to statewide ecological concerns. The approach used is compatible with that used for forested lands in the remainder of the Southern Appalachian Hardwoods, thus allowing for monitoring and assessment of ecological conditions across a much larger landscape.

The mature and late successional stages of forests are well represented across the GWNF; however, grassland, shrubland, regenerating forest, and open woodland conditions are lacking. A large number of species were identified that depend on these open habitats and these open conditions need to be well distributed on the landscape. Given the loss of privately managed forest lands, early successional habitat on the GWNF becomes increasingly important. An important feature of the GWNF is the large blocks of forested land situated within a landscape of developed and developing lands. The importance of these large blocks is recognized in landscape plans used by other public and private groups such as the Virginia Natural Heritage Program and The Nature Conservancy. Maintaining the habitat value of the large blocks of forested lands is not as simple as just keeping the lands in federal ownership. Many species, including those with declining populations or limited distribution, require some level of open conditions within the forested habitat during some phase of their life cycle. These open conditions can include open woodlands, regenerating forests, grass openings, or areas dominated by shrubs.

Desired conditions and objectives were developed for the nine ecological system groups. Management to meet the ecosystem objectives will allow the GWNF to maintain and improve ecosystem diversity, provide for the needs of the diverse plant and animal species on the Forest, and provide management direction to support viable populations of native and desirable plants, fish and wildlife. The GWNF, for the most part, does not have major ecotypes that were converted to other forest types from previous activities. Therefore, there is little need for restoration of tree species back to natural landscapes. The exception to that is the loss of the American chestnut, which was once a dominant species that succumbed to disease. However, it is the forest vegetation structure and composition of the understory that are the key features in need of restoration. This involves developing landscapes that represent typical disturbance regimes for each ecological system, often using timber harvest and fire management as vegetation management tools. Prevention and control of non-native invasive species is another key component of restoring these systems.

RATIONALE: All of the alternatives provide habitat for a wide variety of plants and animals. However, I recognize that restoring ecological conditions and providing habitat for many of the species that need some level of openings in the mature canopy of the forest requires management of the vegetation. This management is predominantly through the use of fire and timber harvest. Alternative C has no timber harvest and limited use of prescribed fire. It provides for the least diversity of structure in the forest and would result in the most species whose habitat conditions could decline. Alternatives B, E, G, H, and I are similar and have the best mix of fire management and timber management to provide habitat diversity to benefit the most species.

All of the alternatives also protect federally listed threatened and endangered (T&E) species. All of the known locations of T&E plant species are within Special Biological Areas or other management prescription areas that protect habitat. Special Biological Areas are identified where the primary goal is to restore and maintain the rare community or unique assemblage of rare species. Fifty-seven areas were added and existing areas were expanded to a total of 53,000 acres of Special Biological Areas. Alternatives E, G, H, and I also identify additional Geologic Areas to protect caves. While the management activities in Alternatives A, B, D, E, F, G, H, and I could adversely affect individual Indiana bats, the overall management strategy in these alternatives protects the known hibernacula of the Indiana bats and provides more open canopy habitat resulting in a net improvement of habitat conditions for the bat.

Alternative I is among the best at addressing Criteria 2 and 3 by maintaining and restoring ecological systems and providing direction and management activities to benefit species of special interest or concern. It addresses the needs of federally listed species and establishes and maintains Special Biological Areas, Key Heritage Community Areas, Geologic Areas, the Shenandoah Crest-Cow Knob Salamander Area, and the Indiana Bat Conservation Areas.

Objectives to meet these needs include increasing the annual prescribed burning program from 3,000 acres to a range of 12,000 to 20,000 acres and increasing the annual timber regeneration areas in a range of 1,800 to 3,000 acres. While it may take many decades to completely achieve desired conditions for ecological and species diversity, actions initiated during the next 15 years covered by this Plan will set the stage for continued progress.

The level of fire and timber harvest is similar to the level advocated by many comments and organizations. While some groups requested a higher level of timber harvest, the amount in Alternative I is believed to be the highest level that could be anticipated with expected budget allocations.

Fire

ISSUE STATEMENT: The management of fire to achieve goals related to protection of property, wildlife habitat, ecosystem diversity and fuels management may affect air quality, non-native invasive species, recreation, water quality, wildlife, and silviculture.

BACKGROUND: Fire is acknowledged as an important part of some ecosystems on the Forest. Aggressive control of wildfire (unplanned ignitions) throughout much of the twentieth century resulted in uncharacteristic species composition and structure changes to these ecosystems. Management of prescribed fire and some wildfires can serve to restore and maintain these ecosystems, while also protecting national forest and adjacent lands from the negative effects of unplanned wildfire.

RATIONALE: Alternatives B, E, F, G, H, and I each provide for a substantial increase in the use of prescribed fire to restore ecological systems to fire regimes that will support native vegetation. Alternatives C and A provide the least use of prescribed fire. I recognize that our most effective and efficient tools for vegetation management are the use of fire and timber harvest. Although Alternative E has the greatest objective for prescribed burning, Alternative I represents more of a balance between restoration objectives in Criterion 4 that can be accomplished with our implementation capabilities.

Old Growth

ISSUE STATEMENT: Forest management strategies may affect the potential biological and social values associated with the abundance, distribution and management of existing and future old growth.

BACKGROUND: Nearly all the lands that became the George Washington National Forest had been cut over at least once before becoming National Forest System lands. However, in some areas of the Forest, stands of trees have reached ages and structural conditions that qualify as "old growth" under the current definitions used in the Southern Region of the Forest Service. Old growth provides both biological and social values. Old growth communities provide large den trees for wildlife species such as black bear, large snags for birds and cavity nesters, and large cover logs for other wildlife. Ecologically, old growth provides elements for biologic richness, gene conservation, and riparian area enhancement. Old growth areas provide for certain recreational experiences, research opportunities, and educational study. Other areas have associated historical, cultural, and spiritual values.

RATIONALE: The portion of the Forest that will be in old growth conditions should continue to increase substantially under all alternatives due to the current age of the forest stands and the low level of timber harvest. Alternative C will result in the most potential for development of old growth since no timber would be harvested. Alternative F provides for about 600,000 acres of land allocated to management to provide large blocks for old growth development over time. Alternatives A, E, G, H, and I each allocate about 450,000 to these areas of large blocks. Alternatives B and D allocate the least acres to large blocks where prescriptions facilitate old growth development. In regard to the amount of estimated current old growth allocated to lands unsuitable for timber

harvest, Alternative C has the most, followed by Alternative F, then Alternatives A, E, G, H, and I. Alternatives B and D have the least.

While Alternative I does not provide the highest potential for old growth development, it does provide for a large component of old growth in various patch sizes spread across the GWNF. Currently, it is estimated that about 245,000 acres of possible old growth occurs on the GWNF. Due to the low amount of timber production and the current age class distribution across the Forest, there will be ample potential for old growth conditions to develop in the future. I recognize the concerns that we have adequate representation of old growth among the old growth forest types and that we should preserve old growth as we identify it on the ground. Therefore, for most old growth forest types, any identified old growth is unsuitable for timber production. Two of the old growth forest types comprise the majority of acres on the GWNF, and for these types, we should eventually have considerable amounts of old growth conditions. To balance the need for early successional habitat conditions for species diversity objectives in Criterion 2, some timber harvest in these two types is allowed to occur. In the Dry-Mesic Oak Forest and Dry and Dry-Mesic Oak-Pine old growth forest types, any existing old growth, in areas suitable for timber production, will be evaluated during project analysis to determine its suitability for harvest. After ten years of implementing the proposed plan, it is estimated that about 360,000 to 363,000 acres of possible old growth will be present, which responds favorably to the objective to maintain this ecological condition in Criterion 4 and provide the social values associated with old growth in Criteria 5 and 7. This is based on an estimate that about 3,000 acres of old growth in the Dry-Mesic or Dry and Dry-Mesic Oak-Pine communities could be harvested during those ten years.

Climate Change

ISSUE STATEMENT: Changes in climate may require adaptation strategies that facilitate the ability of ecosystems and species to adapt to changes in conditions (such as stream temperature, community vegetation composition, and invasive species). Forest management activities may exacerbate the impacts of climate change or mitigate the impacts through adding to and storing carbon or enhancing opportunities for alternative energy sources (wind, biomass, solar).

BACKGROUND: In developing management strategies to deal with a changing climate, it has been recognized that forests can play an important role in both mitigating and adapting to climate change. Mitigation measures focus on strategies such as carbon sequestration by natural systems, ways to increase carbon stored in wood products, ways to provide renewable energy to reduce fossil fuel consumption, and ways to reduce environmental footprints. Adaptation measures address ways to maintain forest health, diversity, productivity, and resilience under uncertain future conditions so that forest resources can better adapt to change. Based on current projections, the primary regional-level and state-level predicted effects of climate change that would impact the GWNF include: (1) warmer temperatures; (2) extreme weather events; and (3) increased outbreaks of insects, disease, and non-native invasive species. Our more vulnerable resources include spruce forests, trout streams, pine forests, higher elevation habitats, and acid sensitive streams and soils. Wild brook trout populations, once found abundantly in this area, are now generally limited to higher elevations. Brook trout are especially sensitive to water temperature and acid deposition, both of which are likely to increase with climate change.

RATIONALE: Each of the alternatives addresses climate change in different manners. They all do the most important activity, which is to keep these areas as functioning forests. Alternative C relies on natural processes to maintain carbon in old growth vegetation and minimizes any disturbances to the forest. Alternatives B, D, E, F, G, H, and I each seek to improve the resiliency of the forest and the diversity of structure of the forest to reduce its vulnerability to climate change and to provide a diversity of management responses to promote carbon sequestration (a combination of old growth and regeneration). Alternatives A, B, D, E, F, G, and H provide for the development of energy resources that would reduce the reliance on coal. All of these except Alternative E potentially allow

for consideration of wind energy development. Alternative I is similar to these other alternatives in wind energy but does not provide any new availability for oil and gas development.

Alternative I responds very favorably to the climate change aspects of Criterion 3. Alternative I utilizes strategies to address climate change that focus on both adaptation and mitigation by focusing on: (1) reducing vulnerability by maintaining and restoring resilient native ecosystems; (2) providing watershed health; (3) providing carbon sinks for sequestration; (4) reducing existing stresses like non-native invasive species and acidification of streams and soils; (5) responding to demands for cleaner energy; and (6) providing sustainable operations and engaging in partnerships across landscapes and ownerships. Alternative I reduces vulnerability using a mix of active and passive restoration strategies, such as maintaining management options to address changes in the sensitive spruce system in Laurel Fork and having objectives to expand the spruce ecosystem. It utilizes planting of blight-resistant American chestnuts as a restoration tool. It enhances watershed health through restoring beaver meadows, riparian forests, and connected stream systems without unnatural barriers to migration. Priority watersheds help focus priorities for soil and water restoration activities, especially related to acidic deposition. Alternative I also contains direction to reduce geologic hazards, protect soils sensitive to acid deposition, and construct stream crossings to withstand major storm events. Brook trout are identified as a Management Indicator Species and should benefit from an increase in riparian area protection and acid deposition mitigations. A substantial portion of the forest will be in older aged stands that store large quantities of carbon. Regenerating forests take up carbon at a rapid rate and so the emphasis of this alternative on increased regeneration of young to middle-aged forests for long-lived forest products can also help with carbon storage. Alternative I allows for the potential of developing wind energy in certain areas, if environmental effects can be minimized.

Forest Health

ISSUE STATEMENT: Forest Plan management strategies may affect the spread and control of non-native invasive species, forest pests, and pathogens, all of which have the potential to affect long-term sustainability, resiliency, and composition of forest ecosystems.

BACKGROUND: While the term "Forest Health" can have several meanings, it is used here to identify the effects of forest pest problems and non-native invasive species. It is a dynamic concept that considers the conditions of our forested ecosystems when subjected to insect and disease organisms and/or invasive species that may otherwise contribute to poor development. While not all non-native species are known to disrupt native ecosystems, of particular concern are those that are successful at invading and rapidly spreading through natural habitats. These include a wide variety of organisms such as the chestnut blight fungus, gypsy moth, hemlock woolly adelgid, didymo algae, and ailanthus. In addition to these non-native pests, it includes the native pine bark beetles. Invasive plants create a host of harmful environmental effects to native ecosystems including: displacement of native plants; degradation or elimination of habitat and forage for wildlife; extirpating rare species; impacting recreation; affecting fire frequency; altering soil properties; and decreasing native biodiversity. Invasive plants can spread across landscapes, unimpeded by ownership boundaries. Control of existing populations, prevention of the spread of known pests, mitigation of existing problems, and prevention of the introduction of new pests are all components of this issue.

RATIONALE: The alternatives (B, E, G, H, and I) that provide for the most vegetation management for restoration also provide the best opportunity to provide for resilient systems of native vegetation that can better withstand the impacts of insects and disease. In contrast, the establishment of more open canopy conditions can also increase the opportunity for non-native invasive plants to become established in the open areas. Therefore, these alternatives, along with Alternatives C, D and F, also establish direction to reduce the potential for introduction or spread of non-native invasive plants and for pretreatment of areas where management activities have a high potential to create openings where invasive plants may thrive. Alternative C creates the fewest openings, so it would provide

fewer opportunities for the spread of non-native plants, but the lack of active restoration activities reduces the resiliency of the ecological systems to withstand impacts. Not all invasive insects, native pests, or many invasive plants need openings to invade the forest.

With its emphasis on restoration of ecological systems, including historic fire regimes, I believe that Alternative I is among the best at maintaining conditions for forest health and responding to Criterion 4. Prescribed burning will be used in a controlled, well-planned manner to manage vegetation, restore fire-dependent ecosystems and species, create desired wildlife habitat conditions, and modify uncharacteristic fuel loads resulting from extended absence of fire and/or tree mortality from non-native insects and disease. Wildfire will be managed so that it functions in its natural ecological role as nearly as possible, while life and property (public and private) are protected and critical resource values, including soil, air, and water quality, are maintained.

Alternative I is also among the best alternatives at providing for prevention and treatment of non-native species while still meeting objectives to create canopy openings and open woodland conditions. Management of all non-native invasive species will focus on four components: (1) prevention of new infestations; (2) elimination of new infestations before they become established; (3) containment or reduction of established infestations; and (4) reclamation of native habitats and ecosystems. Integrated pest management approaches will be used in all four of these components. Alternative C relies on natural processes to dominate management of the Forest. Unfortunately, human influences have become quite extensive, especially in regard to non-native species, air pollution, climate change and fire management. The widespread nature of these disturbances reduces the ability of natural processes to fully function to maintain ecological systems.

Recreation

ISSUE STATEMENT: Forest management strategies should determine an appropriate mix of sustainable recreational opportunities (including trail access) that responds to increasing and changing demands and also provides for public health and safety and ecosystem protection (such as soil and water resources, nesting animals, riparian resources and spread of non-native invasive species).

BACKGROUND: The Forest is within a 75-mile market radius that includes 10 million people. A large population in the eastern U.S. lives within a day's drive of the Forest. Local and regional visitors use the Forest for a variety of recreational opportunities, from primitive hiking and camping to developed recreation sites and motorized travel. Motorized recreation includes both Off-Highway Vehicle (OHV) use for cars and trucks that use high clearance roads and All-Terrain Vehicle (ATV) use for smaller all-terrain vehicles and motorbikes that use ATV trails.

Demand for long-distance trails for special recreation events, such as long-distance mountain bicycling, equestrian endurance rides and runner marathons, has increased in recent years. There is more demand than supply for motorized trail opportunities as opportunities for such use is very limited on private land within the market area. This increasing demand, coupled with flat or declining budgets, has created challenges for the Forest to maintain roads, trails, and facilities in a safe, useable condition for the recreation visitor.

Recreational opportunities and scenic landscapes also play a key role in the quality of life associated with an area and can influence the area's attractiveness for tourism, business development and people choosing to live there.

RATIONALE: Alternative A has the greatest increase in developed recreation facilities, about 23% increase over the current program; but based on historical budgets it is extremely unlikely to be implemented. Alternative F has a more modest increase in developed recreation of 5-15 percent. Alternatives B, G, H, and I maintain developed recreation at the current level, or with a slight increase. Alternatives C and E decrease developed recreation.

In regard to recreation settings, Alternative C maintains the most areas of semi-primitive setting, followed by Alternative F, then Alternatives A and E, and then Alternatives G, H, and I. Alternatives B and D maintain the least semi-primitive settings.

Alternative D increases non-motorized trail mileage by 50-100 miles. Alternatives A, C, F, G, H, and I increase trail mileage by up to 30 miles and the other alternatives keep the current level of trails. In Alternatives B, C, F, G, H, and I, there is no net increase in trail maintenance, with a focus on relocating or decommissioning unsustainable trails to offset maintenance required for new trail miles. For ATV trails, Alternatives A and D allow the construction of an additional trail system; Alternatives F, G, H, and I allow an increase in the miles of trails at the existing trail systems; and Alternatives B, C, and E have no change in the motorized trail system.

For scenery, Alternative C provides for the greatest protection of scenic values due to the lack of management activities. Alternatives H and I are best from a visual perspective among the alternatives where vegetation management activities would occur because they require more constraints on activities to protect scenery. Alternative A is similar to Alternatives H and I, and would be followed by Alternatives E, F, and G. Shenandoah Mountain is recommended for National Scenic Area designation in Alternatives F, H, and I due to its exceptional beauty, scenic overlooks, outstanding opportunities for solitude, habitat for species including the Cow Knob salamander, and abundant recreational opportunities. The recommendation of Shenandoah Mountain as a National Scenic Area and the development of the Plan direction for this area respond well to Criterion 7 by incorporating comments from a number of individuals and organizations.

Increasing population and development adjacent to the GWNF will continue to result in increasing demands for non-motorized and motorized recreation. While Alternative I does not provide the highest level of developed recreation or trail facilities, it does allow for an increase in both, but at a level that recognizes the limited economic means to manage and maintain these facilities. I support Alternative I because it would, in cooperation with trail partners, focus on a trail system that is responsive to user needs in an economically and environmentally sustainable manner as desired in Criteria 3 and 5. This will be accomplished by working with various trail user groups and individuals to decommission some low use trails, relocate other trails to more suitable locations, focus on trail conditions for higher use trails, expand existing trails or construct new trails where appropriate; all with an objective of no net increase in trail maintenance costs. Alternative I allows for some increase in trails at existing ATV trail systems, but does not add any new motorized trail systems, since the Forest does not have the capacity to maintain another motorized trail system. It is a challenge to respond to the desire of some Forest users and identify a specific OHV road system in a Forest Plan due to changing road conditions and limited maintenance capabilities. Sometimes it is necessary to close roads to protect soil and water quality. One of the objectives from the Transportation Analysis Process (TAP) for the GWNF is to reduce the maintenance levels for a number of roads. This will create opportunities for additional high clearance driving experiences, which in turn will mean that we can still provide for these driving experiences at or above current levels.

Alternative I provides for the highest level of scenic protection among the alternatives with active vegetation management. However, I acknowledge that the increase in vegetation management activities, such as timber harvest and prescribed burning, for restoration objectives has the potential to affect scenic resources in the short-term.

Access

ISSUE STATEMENT: Forest management strategies may affect the balance between public and management needs for motorized access to Forest lands (for recreation, hunting, management activities, fire suppression) and protection of soil and water resources, wildlife populations and habitat, aesthetics, forest health, and desired vegetation conditions.

BACKGROUND: Forest system roads are the primary means of motorized access to the national forest. However, they are also a source of concerns including the environmental effects of roads (on water quality, soil erosion, and habitat) and the social effects on remote settings. The amount of motorized access should be balanced with wildlife habitat needs, the need to provide both motorized and non-motorized recreational opportunities, the need to protect soil and water resources, the need to have management access, and the financial capability of maintaining safe and environmentally secure roads. We evaluated the roads on the GWNF in this context through a Transportation Analysis Process (TAP) and identified the need to decommission some roads, likely construct some roads (not location-specific) for future needs, and reduce the maintenance on other roads.

RATIONALE: Alternative A does not decommission any roads and constructs a high number of new roads, so it provides for the most motorized access. However, recent budget history has indicated that it is unlikely that funding to maintain this level of a road system is sustainable. Alternative D has an intermediate amount of road decommissioning and the highest level of new road construction so it has the next largest road system to provide access. Alternatives B, E, F, G, H, and I have larger decommissioning objectives and fewer miles of new road construction. The road decommissioning would generally be done on roads that are already closed to public use, so these alternatives provide the best opportunity to continue to provide access at an economically sustainable level. Alternative C would decommission the greatest number of roads and reduce motorized access to the Forest more than any other alternative. I support Alternative I because it allocates several key semi-primitive non-motorized and semi-primitive motorized areas to Remote Backcountry Areas that were outside of potential wilderness areas. By emphasizing timber production in areas with existing access and protecting large blocks of remote lands, it also decreases the need for permanent road construction but allows for temporary road construction. Alternative I provides for the variety of recreation opportunities in Criteria 5 and 6 and the desired sustainability in Criterion 6.

Wilderness/Roadless

ISSUE STATEMENT: Forest management strategies may affect the balance between the desires for permanent protection of remote areas and the desires for management flexibility and ability to respond to changes in ecological, social and economic conditions when identifying areas to be recommended for Wilderness and determining how potential wilderness areas and other remote areas should be managed.

BACKGROUND: Management of remote areas on the Forest continues to be one of the most prominent issues raised in comments. Remote areas include existing Wilderness, the Inventoried Roadless Areas identified in the 1993 GW Forest Plan (and incorporated into the 2001 Roadless Area Conservation Rule [RACR]), and the potential wilderness areas (identified as areas meeting the definition of wilderness that need to be evaluated in the current revision process). The reasons brought forward from the public for those wanting to have additional wilderness include: ecological values of remote, intact areas; recreational values; proximity of large masses of people to the Forest; protection of watersheds through permanent protection; carbon storage; ability for latitudinal range adjustments for species due to climate change; future scientific reference; and a need to bring the amount of wilderness on the Forest more in line with amounts on other national forests. On the other hand, the reasons brought forward from the public for those opposing additional wilderness include: lack of balance of forest age classes (many species are threatened without early successional habitat); limitations on recreation use by those less physically fit; limitations on group size for recreation events; limitations on special use events; prohibitions on all motorized and mountain bike access; restrictions on treatment of invasive species; limitations on meeting energy resource demands; limitations on emergency access; firefighting restrictions; and limitations on options as conditions or future demands change.

The GWNF has a distinction of being near large populations and experiencing an increasing level of development of adjacent lands, yet containing a large amount of remote settings. The GWNF has six

Wildernesses (40,000 acres), one National Scenic Area (8,000 acres), and 23 Inventoried Roadless Areas (IRAs, 240,000 acres). As part of the revision process, the Forest identified 37 areas as potential wilderness areas (PWAs) with a total of 370,000 acres.

RATIONALE: Alternative C identifies all of the potential wilderness areas (PWAs) as Recommended Wilderness and so has the greatest level of wilderness recommendations and of remote settings of any alternative. Alternative F provides for the next highest level with 113,000 acres of Recommended Wilderness and 128,000 acres of Recommended National Scenic Areas. Alternatives H and I are next with two new wilderness areas and four additions to the currently designated wilderness areas for a total of about 27,000 acres of Recommended Wilderness. Alternatives H and I have a Recommended National Scenic Area on Shenandoah Mountain, for approximately 90,000 acres (including about 6,000 acres of existing wilderness and about 15,000 acres of Recommended Wilderness). Alternative E has fewer Recommended Wilderness acres than Alternatives H and I, has no Recommended National Scenic Areas, but does put more of the potential wilderness areas in remote settings than does Alternative H or I. Alternative A provides for the least wilderness and the least amount of the potential wilderness areas in remote settings.

Since they have the greatest acreage in Recommended Wilderness, Alternatives C and F also result in the greatest potential for road closures and closures of trails to bicycle use. The levels of recommended wilderness in Alternatives I, H, G, E, B, and D were chosen to minimize impacts to other resources, so result in fewer potential road closures and closures of trails to bicycle use. The same is true of the loss of lands suitable for timber production and for the amount of lands with private minerals in recommended wilderness. Alternative A has the fewest conflicting uses with wilderness recommendations.

For Alternatives C, F, G, H and I, any management activities in Inventoried Roadless Areas will comply with the 2001 Roadless Area Conservation Rule (RACR). In Alternatives E, D, and B, in order to address and analyze some specific resource management issues, up to 7,500 acres of Inventoried Roadless Areas were identified as being available for timber harvest or road construction if the RACR was not in effect. However, it is recognized that these activities could not be implemented as long as the RACR is in effect.

The disposition of the PWAs was a topic of many comment letters and public meeting discussions. Some people will be disappointed not to find more areas on the list of areas Recommended for Wilderness. Other people will be disappointed that any areas are being recommended at all. My decision as to which areas to recommend was based on a process that examined and weighed multiple factors—including capability, manageability, availability, need, current uses, and potential for non-conforming uses, as well as public sentiment (see Appendix C of the FEIS). All of the areas have a number of conflicts.

One of the complicating factors is the degree of private land boundary associated with the GWNF. On one hand, the expected increase in development adjacent to the GWNF is a reason to permanently protect some lands, but on the other hand, I am concerned about the need to be able to protect those lands with law enforcement, climate change adaptation needs, forest health needs, and wildfire suppression. I heard from many who said that wilderness designation was necessary to provide permanent protection for scenery, recreation opportunities, biological resources, and wilderness attributes. I agree that these areas have numerous values worthy of protection but I believe there are other management area prescriptions that still offer these protections while giving us the flexibility to respond to changing resource conditions or restoration needs. For example, the Laurel Fork area is one where there has been keen interest in wilderness designation for many years because of the desire to protect its rare communities and species. However, Alternative I responds more favorably to Criterion 2 by allocating this area to Special Biological Areas and Remote Backcountry Areas that will maintain the remote character and remote recreation settings of the

area, but will allow us to actively maintain and enhance the biological resources, such as the spruce ecosystem.

I looked for areas that have strong wilderness attributes and that are of a size where natural processes can dominate the landscape. I tended not to recommend those areas that have relatively higher levels of non-conforming uses, such as mountain biking, mechanized maintenance of wildlife-related treatment areas, or highly popular trails that require regular mechanical maintenance. The amount of underlying outstanding mineral rights was another key factor in my decision.

Weighing all of these factors and trade-offs, I believe Alternative I recommends areas that are of a size and configuration that provide strong additions to the National Wilderness System, while minimizing conflicts with non-conforming uses. These areas are Little River, Beech Lick Knob, Rough Mountain Addition, Ramseys Draft Addition, Rich Hole Addition and Saint Mary's Addition.

Another aspect of this issue is how to manage the PWAs that are not Recommended for Wilderness, particularly with the potential construction of roads within those areas. Of the potential wilderness areas that are not Inventoried Roadless Areas (148,000 acres), about 80,000 acres already have some level of road access and have been managed in the past.

Under Alternative I, Plan direction increases the total area managed for remote settings, which responds well to Criterion 5 by providing large remote blocks of land not commonly found in other land ownerships. All Inventoried Roadless Areas (240,000 acres) are managed to retain their roadless character, prohibiting timber harvest and road construction with limited exceptions. Of the potential wilderness areas that are not Inventoried Roadless Areas (148,000 acres), about 50,000 acres would be assigned to management prescriptions where timber harvest and road construction are not allowed. About 80,000 acres that have existing road access would be assigned to the Mosaics of Habitat management prescription where vegetation is actively managed and road construction is allowed. This provides for a well-balanced approach to the management of remote lands, while still allowing vegetation management activities where current access and management investments exist. This alternative responds most favorably to Criterion 7 by balancing the wilderness and roadless issues and the vegetation management issues in a manner similar to those submitted in comments from a number of individuals and organizations.

Economics and Local Community

ISSUE STATEMENT: Management activities may affect the economic role of the Forest, particularly the role it plays in the economy of local communities, including the production of ecosystem services and commodity outputs. Increasing population and development near the Forest may influence access to the National Forest and management activities such as special use requests, fire management, and responses to additional recreation demands.

BACKGROUND: The primary management activities that can be economically valued through impacts on jobs and income include wood products, different recreation activities, special use permits and minerals. Although the amount of wood products historically offered by the GWNF meets a very small part of regional demand, it does influence the local economy for both small-scale logging contractors and large-scale operations such as MeadWestvaco in Covington, Virginia. The largest amount of revenue that is directly generated on the GWNF is through recreation fees. These fees are returned to the GWNF's recreation program. Mineral revenues are currently minimal on the Forest but could greatly increase with Marcellus shale gas development.

Ecosystem services are the suite of goods and services from the Forest that are vital to human health and livelihood but are often not easily valued in economic terms. These services include wildlife habitat and diversity, watershed services, carbon sequestration, and scenic landscapes, for example. These outputs and services can all be important to many of the rural communities in and around a national forest. Several categories of activities identified as important to local communities

include tourism (family-based nature activities, recreation events, adventure trail experiences like all-terrain vehicle trails, equestrian and mountain bike use, wilderness, new trails), habitat management that increases diversity for wildlife viewing and game populations for hunting, and timber production that supports the logging industry.

RATIONALE: I believe Alternative I provides for a mixture of resources, uses, and opportunities to address the varied needs of users and the economic opportunities for local communities. Plan direction increases the total amount of area managed for remote settings which may increase the tourism opportunities for the segment of the population seeking this type of recreation and increases jobs in the local communities. As previously described, this alternative is also among the best at providing wildlife habitat diversity (and hunting opportunities), watershed health, carbon sequestration, and scenery. Standards are used to protect drinking water supplies and maintain the high quality of water needed to support the needs of local communities. Maintaining the timber harvest level at, or near, the 1993 Forest Plan level is important for local communities and jobs since agriculture and forestry are a large part of Virginia's economic base. Maintaining safe access will continue to support recreation use and tourism generating jobs and income to local rural communities. Therefore, Alternative I positively responds to Criterion 6.

Timber Harvest

ISSUE STATEMENT: Forest Plan management strategies may affect: a) the amount and distribution of land suitable for the sustainable harvest of timber products; b) the amount of timber offered by the Forest; c) the role of timber harvest in benefitting local economies and other multiple use objectives; and d) the methods used to harvest the timber. If the Forest responds to needs for biomass for energy production, whole tree harvesting may affect nutrient cycling, wildlife habitat, and soil productivity and stability. Timber harvest may have effects on other resources.

BACKGROUND: Timber harvest is one of the tools used to manage vegetation on the Forest to create a diversity of habitat conditions. It also produces wood products that benefit local economies. The ecological, social, and economic effects of the timber management program on the GWNF, both positive and negative, are of great importance to many. Some people strongly stated that the Forest should reduce the acres suitable for harvest, reduce the Allowable Sale Quantity (ASQ), and decrease the commercial timber program due to adverse impacts to: water quality, competition with private lands, air quality, scenery, ecological habitats such as large areas of intact forest (fragmentation), and a wide variety of other ecological/environmental resources. Some indicate that commercial timber harvest on the Forest is not economically viable and competes with privately held timber, that demand for timber can be met on private land, or that the level of the timber sale program should be based on reasonable budget expectations. On the other hand, other people strongly support an expanded timber program because of the positive impacts on: balancing age classes and reducing acres of an aging forest, maintaining species composition, wildlife habitat, responding to an increased demand for wood products (including biomass), reduction of hazardous fuels, and benefits to local economies. Therefore, they argue that there should be an increase in suitable acres and Allowable Sale Quantity.

Another aspect of this issue is the potential use of forest wood and fiber as biomass for energy production. This raises concerns on the effects on carbon sequestration and on the removal of too much organic material that could increase soil erosion and/or remove too many nutrients from the site, particularly in low site index areas or areas affected by acid deposition.

RATIONALE: I recognize the need for timber harvest as a management tool for a variety of objectives, ranging from habitat manipulation, to restoration of vegetation structure and composition, to promotion of regeneration, to providing a supply of wood products to local economies. Ensuring sustainable timber production was one of the original reasons the Forest Service was created, and this use of national forests has been validated many times over in the 100+ years since, most

notably in the Multiple-Use Sustained-Yield Act of 1960 and the National Forest Management Act of 1976. The question to be addressed in plan revision, therefore, is not whether timber harvest is allowable on the Forest, but rather where and under what conditions timber harvest may occur. I am also aware that timber harvest and associated activities, particularly road building, can have adverse effects. To address these potential impacts, the Revised Plan has a wide array of standards to prevent or mitigate degradation to soil, water, plant, wildlife, aquatic, scenic, recreation, and heritage resources.

Alternative D allows for the largest amount of timber harvest. Alternatives A, B, E, G, H, and I have similar levels of harvest. Alternatives B, D, G, H, and I have similar levels of lands available for timber production. Alternatives B, G, H, and I have the greatest flexibility in determining the locations of the timber harvest to meet objectives. Alternative C allows no timber harvest. Alternatives H and I include standards regarding wood biomass energy and removal of woody material on sites with poor soil productivity.

I support Alternative I because of the balance between land allocations where it is more efficient for timber production because of existing access or construction of short temporary roads and land allocations where large, remote blocks of land are emphasized. It provides the variety desired in Criterion 6 while meeting the sustainability of the ecosystems in Criteria 2 and 3. Alternative I increases the acres suitable for timber production over the amount in the 1993 Forest Plan. Keeping a larger area of suitable acres allows for more flexibility in meeting ecological goals while addressing the social concerns that arise when management activities are proposed for areas. Some of our public expressed concerns that given the amount of timber production in recent years on the GWNF and tighter budgets, we should be lowering our objective for timber production. However, I am more concerned that the ecological sustainability analysis identified a large number of species that need some type of open conditions within the forested landscape. The amount of late successional forest is high; it is the open conditions that are lacking. It is important for us to have objectives that push us towards meeting these goals. We will work towards greater efficiencies to increase our level of accomplishment.

Wind Energy

ISSUE STATEMENT: Responding to opportunities to develop wind energy generation may result in effects on a wide variety of resources (including birds, bats, scenery, trail use, soils on ridgetops, water, noise, remote habitat, local communities/economies, and social values).

BACKGROUND: Wind energy is renewable and can reduce the use of fuels generating carbon emissions. The GWNF has areas with a high potential for wind area development. The GWNF is in close proximity to growing population centers that would benefit from additional and clean energy production. However, there are concerns about the effects to water, birds, bats, views, scenery, aesthetics (height of towers), noise, and fragmentation of habitat. These concerns relate to both construction and operation of the wind turbines and the associated infrastructure development to support the turbines (roads, powerlines).

Most of the GWNF is located on the ridgetops and sideslopes of the Appalachian Mountains, while private lands occupy the valleys. This puts much of the Forest in a prominent scenic landscape. Our higher elevations on ridgetops are also critical habitat for migratory birds and other species but they are also the best locations for wind energy.

RATIONALE: Alternatives C and E do not allow development of wind energy on the Forest and so would have none of the impacts, and none of the benefits, of wind energy being produced on the Forest. Alternative A has the fewest restrictions on wind energy development. The other alternatives identify portions of the Forest as unsuitable for wind energy development. These alternatives identify from 53,000 to 82,000 acres of the 117,000 acres with high potential as unsuitable for wind energy development. Of these, Alternatives H and I have the most areas as unsuitable.

I recognize the need for clean energy sources. National Forest System lands are some of the few federally administered lands in the eastern U.S. where wind energy development could be considered. However, every source of energy comes with potential impacts. I believe that Alternative I best satisfies Criterion 6 in that it places much emphasis on sustainability in making the greatest amount of sensitive areas unsuitable for wind energy development, while allowing for some level of development, if the subsequent site-specific environmental analysis supports it.

Evaluation of Alternatives for the Oil and Gas Leasing Decision

The following discussion, organized by the subject of the significant issues, provides the rationale for why Alternative I is the alternative that best responds to the above evaluation criteria, and best addresses those significant issues that were identified during the development of the FEIS for the decision on oil and gas leasing.

Watersheds, Soil and Water Quality, Riparian Resources and Aquatic Diversity

In regard to gas leasing, Alternative A has the highest potential for impacts to water quality since most of the Forest is available for leasing and there are no additional standards regarding drilling activities. Leasing allows for either horizontal drilling with high volume hydraulic fracturing (HVHF, high volume is generally defined as more than 100,000 to 300,000 gallons of water per well) or vertical drilling. Alternatives B and D have the next greatest potential for impacts to water quality since they allow for drilling on a large portion of the Forest with either HVHF or vertical drilling but they both include a moratorium on drilling and some additional stipulations to reduce impacts. Alternative F makes fewer acres available and includes the same moratorium and additional stipulations as Alternatives B and D. Alternative F also prohibits HVHF in public water supply watersheds. While they make more acres available than does Alternative F, Alternatives E and G have less potential for impacts to water quality since they do not allow the use of HVHF to obtain gas under federal leases.

Alternative H makes fewer acres available (only the acres actually underlain by Marcellus shale), restricts both HVHF and vertical drilling on the more sensitive areas of the Forest and incorporates more standards to reduce the potential for impacts from drilling. Alternative H removes the following areas from leasing: public water supply watersheds, existing Wilderness and Recommended Wilderness, Mount Pleasant National Scenic Area and Recommended National Scenic Areas, the Laurel Fork area, and Indiana Bat Primary Cave Protection Areas. Special Biological Areas and Remote Backcountry Areas would only be available for oil and gas leasing with no surface occupancy. Comparing Alternatives E, G and H is difficult; if vertical drilling is utilized extensively, E and G could have greater impacts. If HVHF drilling, as currently performed, were the primary means of drilling, as is expected with Marcellus shale gas development, then Alternative H would have a greater potential for impact. While Alternative H has the strictest package of control measures (such as limits on the withdrawal of surface water or ground water from NFS lands, and requiring closed loop systems for hydraulic fracturing), a high level of drilling would increase the possibility of accidents or spills that could impact water quality. Alternatives C and I have the least impact on water resources since no areas would be available for federal leasing, except for those areas currently under lease.

Terrestrial Biological Diversity, Old Growth, Forest Health, Timber Harvest

The main impact of oil and gas activities on these resources would be the amount of land surface disturbed by drill pads, pipelines and access roads. Based on this, Alternative A results in the most land disturbance, followed by Alternatives B and D and then in descending order: F, H, G and E. Alternatives C and I have the least disturbance and the least potential for impacts to these resources.

Fire, Wind Energy

It is unlikely that gas and oil activities would affect fire or wind energy development.

Climate Change

Alternatives A, B, D, E, F, G, and H provide for the development of energy resources that would reduce the reliance on coal. Alternatives C and I do not provide any new availability for oil and gas development at this time.

Recreation and Access

Oil and gas activities could affect recreation activities primarily in terms of the degree to which the settings and patterns of use are changed due to development operations. Oil and gas development would result in additional roads on the Forest, but most of these roads would likely not provide additional motorized access to the Forest, as they would likely be closed except for access to maintain the wells. Gas drilling activities would likely result in increased maintenance needs that would be covered by provisions in the Application for Permit to Drill. Potential impacts to recreation are highest in Alternative A, followed by Alternative D, B, G, E, F, and H. Alternatives C and I have the least potential to impact recreation use.

Wilderness/Roadless

Gas and oil activities would not have significant impacts to wilderness. However, activities would have varying potential to occur in potential wilderness areas among alternatives. This potential is highest in Alternative A, followed by Alternatives B, D, H, G, E and F. No activities would occur in potential wilderness areas in Alternatives C or I, except for the possible development of existing oil and gas leases in the Shaws Ridge and Galford Gap potential wilderness areas.

Economics and Local Community

The economic and social effects of natural gas development vary greatly among the alternatives and are dependent on the pace and scale of drilling, not only on National Forest System lands but also on private lands. Rapid, extensive development could generate booms in jobs and income but could overwhelm local community services. It could also change a rural, scenic landscape into a more industrialized landscape. Alternatives C and I provide for the fewest number of jobs and least income due to the lack of gas development. While Alternative I does not make any federal oil and gas available for leasing, there is no current demand for any exploration or development activities at this time and nothing on the immediate horizon. Therefore, jobs (which are estimated to increase by as much as about 3,000 in the first decade under Alternative A) and economic benefits from oil and gas leasing are uncertain at this time. The ecosystem services provided in Alternative I are immediate to the local community and Alternative I responds favorably to the concerns identified by several local County Boards of Supervisors (Criterion 7) about potential impacts to water quality and infrastructure.

Oil and Gas Leasing

ISSUE STATEMENT: Use of National Forest System lands to support energy needs through federal oil and gas leasing may affect forest resources and impact adjacent private lands.

BACKGROUND: Energy production has long been a component of National Forest System management and gas development provides energy to meet national needs and contribute to the nation's energy supply and independence. There are no active gas wells currently in production on the Forest and about 10,000 acres are currently under lease for oil and gas. A particular type of gas well operation is the development of gas deposits within the Marcellus shale formations, through horizontal drilling and use of high-volume hydraulic fracturing (HVHF). Concerns about hydraulic

fracturing include the quantity of water needed in the process, negative effects on water quality (ground and surface), wildlife, air quality, viewsheds, forest fragmentation, and ecotourism. Benefits from HVHF include a smaller footprint by having fewer well pads than vertical drilling to access the same amount of gas; its cost efficiency; and the potential to increase local employment and income.

Many comments indicated that people were in favor of keeping the prohibition on horizontal drilling as identified in the Draft Plan. We also received comments that a total prohibition on a drilling method was inappropriate and that with the proper control measures, drilling could be completed without adverse impacts.

In response to comments to the Draft, that we had not adequately evaluated measures that could reduce the impacts of horizontal drilling, the Interdisciplinary Team, with the assistance of the Bureau of Land Management, developed Alternative H to explore the potential to include horizontal drilling and HVHF only in the Marcellus shale in an environmentally acceptable manner. The intent was to: (1) identify the specific resource concerns with oil and gas drilling; (2) identify control measures to reduce or eliminate the resource impacts; (3) identify those sensitive areas where little to no risk of impacts can be accepted; (4) review the remaining risks and hazards; and (5) establish monitoring. Appendix I-Analysis of Concerns and Risks in the FEIS highlights this additional analysis. Under any of the alternatives that allow for gas leasing, it is important to note that at such time as specific lands are being considered for leasing, the Forest Service will review any area or forestwide decision and will only authorize BLM to offer specific lands for lease after verifying that oil and gas leasing of the specific lands has been adequately addressed in a NEPA document and is consistent with the Forest Land and Resource Management Plan (36 CFR 228.102(e)(2)). Further, after an area is leased, but before any drilling would be authorized, another round of environmental analysis would occur. This second level of analysis includes a site-specific environmental analysis of actual drill sites at the application for permit to drill stage. The public would be included in that process.

Specific concerns with horizontal drilling and hydraulic fracturing included: effects of water withdrawals on water supplies; effects of accidental spills; surface water and groundwater contamination during drilling and hydraulic fracturing operations or from stormwater during operations; pit or surface impoundment leakage; roads and other surface disturbance increasing non-point source pollution or the spread of non-native invasive species; effects on recreation users; impacts on Special Biological Areas; effects of drilling and well stimulation on caves and karst resources; and impacts on scenery.

In response to overall comments that supported a ban on horizontal drilling and requested that additional limitations on areas where vertical drilling could occur, Alternative I was added, because horizontal drilling and the use of hydraulic fracturing are standard operating techniques for natural gas extraction and opposition to these techniques is essentially opposition to making natural gas available. This new alternative combines most of the resource management activities in Alternative H with the gas leasing option from Alternative C that makes no federal minerals available for gas leasing.

RATIONALE: The energy issues were some of the most difficult to address. This was the issue that generated the most comments, as well as a Congressional hearing (July 8, 2011). The President's Blueprint for a Secure Energy Future (March 30, 2011) notes that America's public lands provide resources that are critical to the nation's energy security. It also states that development should take place in the right places to minimize harm to the environment as well as to public health and safety.

The alternatives range from most of the Forest available for vertical and horizontal drilling in Alternative A, current management direction, to none of the federal minerals available for lease in Alternative C and no new Federal minerals available in Alternative I, the selected Alternative. Alternatives B and D are similar with about three quarters of the Forest administratively available for vertical or horizontal drilling, but with stipulations requiring a moratorium on horizontal drilling until after the EPA completes its analysis of impacts on drinking water and with stipulations requiring

additional measures to reduce impacts from horizontal drilling. Alternative F makes fewer acres available, but uses the same stipulations, plus a prohibition on horizontal drilling in public water supply watersheds. Alternatives G and E have a little more land available than Alternative F, but do not allow any use of horizontal drilling. This option was developed in response to many comments received during scoping, including those from several County Boards of Supervisors.

Alternative H differs from other alternatives in that it identifies lands as administratively available in the Marcellus shale area only, as a result of BLM analyses documenting the non-Marcellus shale area's development potential. Under Alternative H: 51,000 acres are legally unavailable for leasing; 128,000 acres are administratively unavailable for leasing; 416,000 acres are administratively deferred for leasing; 137,000 acres are available for leasing with a No Surface Occupancy (NSO) stipulation; 88,000 acres are available for leasing with Controlled Surface Use stipulations; 236,000 acres are available for leasing using the Standard Lease Terms; and 10,000 acres are currently under lease. Alternative H also adds standards regarding withdrawal water, use of closed loop systems for hydraulic fracturing, and other measures to reduce impacts to water and other resources.

Under Alternative I, lands within federal mineral estate that are not currently leased are unavailable for oil and gas leasing. This decision does not affect the approximately 167,200 acres (or 16 percent of the GWNF) of mineral rights that are owned by private parties (also called outstanding or reserved). It also does not affect the approximately 10,000 acres (or 1 percent of the GWNF) of mineral rights that are under current federal oil and gas leases. The approximately 51,000 acres (or 5 percent of the GWNF) that are congressionally withdrawn from mineral entry (i.e. Wilderness and the Mount Pleasant National Scenic Area) will continue to be legally unavailable for federal oil and gas leasing. All other areas are administratively unavailable for federal oil and gas leasing.

I concluded, based on the analysis presented in the FEIS for Alternative H, that gas leasing could be conducted on the GWNF in a manner that would reduce the potential for adverse impacts to water resources. However, a combination of factors led to not making any new lands administratively available for oil and gas leasing as included in Alternative I. These factors include:

- While many commenters supported gas leasing on the GWNF, there were also many who did not support gas leasing including local citizens, their elected officials, and many other interested parties regarding potential impacts. These concerns included comments from the County Boards of Supervisors in Augusta, Bath, Botetourt, Rockbridge, Rockingham, and Shenandoah Counties and the Cities of Harrisonburg, Lynchburg and Staunton.
- An apparent lack of interest in gas development as evidenced by the fact that both existing federal leases on the Forest and existing mineral rights owned by private parties (also called outstanding or reserved) are not currently active. There is also no mineral development occurring on adjacent private lands. We have not directly received or indirectly heard of any interest in leasing federal gas resources on the GWNF even though nearly the entire Forest was available for leasing under the 1993 Forest Plan.
- The low amount of estimated gas reserves in the portion of the Marcellus formation under the GWNF. As identified in the FEIS, the GWNF has never been a significant supplier of natural gas and given the low amount of gas projected to be in the portion of the Marcellus shale underlying the GWNF, it appears unlikely that it will in the near future.

Alternative I also further reduces the potential for any additional stresses on: our watersheds in relation to sensitive aquatic species, drinking water, and the Chesapeake Bay; the remote recreation settings and the high level of recreation use on the GWNF; and the high level of biological diversity on the GWNF.

The Secretaries of Interior and Agriculture have authority under various federal mineral leasing laws, as defined in 30 U.S.C. 1702, to manage oil and gas operations. Pursuant to the Federal Onshore Oil and Gas Leasing Reform Act of 1987, no federal oil and gas lease may be issued on National Forest System lands over the objection of the Secretary of Agriculture. Further, the Secretary has authority to regulate surface disturbing activities pursuant to Federal oil and gas leases on National Forest System lands. These authorities have been delegated to the Forest Service and implementing regulations are set out in 36 CFR 228. Subpart E.

Congress established under the Mining and Minerals Policy Act of 1970 that it is Federal policy with regard to mineral development to foster and encourage private enterprise in the development of economically sound and stable domestic mining and orderly and economic development of domestic mineral resources. The Multiple-Use Sustained-Yield Act of 1960 (MUSYA) also establishes that nothing in MUSYA is to be construed to affect use or administration of mineral resources of national forest lands. The Mineral Leasing Act of 1920 provides that oil and gas deposits owned by the United States including those in national forests shall be subject to disposition in the form and manner provided in the Act.

MUSYA defines 'multiple use' as management that will utilize resources in the combination that will best meet the needs of the American people, making the most judicious use of land for some or all of these resources, so that some land will be used for less than all of the resources, without impairment of the productivity of the land, with consideration being given to the relative values of various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

In electing not to make lands within the GWNF available for oil and gas leasing at this time, I am mindful that the multiple use mandate and the suite of laws and policies applicable to national forest management and development of mineral resources reflect the need to balance the economic and social interests of the American people with the health, diversity, and sustainability of these forests as part of a National Forest System comprising 193 million acres in 43 states. Our capacity to meet these needs in some forests at some times is frequently balanced by our need to ensure other needs and resources are provided and protected on other forests at other times.

Net Public Benefits

The 1982 National Forest System Land and Resource Planning Rule in its opening paragraph states "the resulting plans shall provide for multiple use and sustained yield of goods and services from the National Forest System in a way that *maximizes long-term net public benefits in an environmentally sound manner.*" (47 FR 43037, Sec 219.1) The term "net public benefits" is defined in the 1982 NFMA regulations as: "An expression used to signify the overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than by a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield." (Sec. 219.3)

Net public benefits have two components – priced and non-priced benefits and costs. Prices for outputs and uses were estimated in the FEIS for each alternative and displayed in Chapter 3, Sections C and D, and also in Appendix B of the FEIS. The Present Net Value (PNV) was used to measure the economic efficiency of each alternative, based on those outputs that can be quantitatively valued. One PNV analysis documented in the FEIS shows that Alternative I has one of the lowest PNVs (when potential revenues from natural gas production are included (see FEIS, Sec. 3D)). However, since there has been no natural gas exploration or development activities on the GWNF, those benefits associated with leasing activities are uncertain. Another PNV analysis, which does not include the potential natural gas revenues (see FEIS, Sec. 3C), shows that Alternative I has

one of the highest PNVs. With respect to considering the non-priced, qualitative benefits and costs, Alternative I places a high priority on water quality and soil productivity. It is among the best of the alternatives at restoring resilient ecological systems. It provides direction to protect and enhance habitat needs of the populations of plants and animals on the Forest. It provides varying levels of protection for the remote areas on the Forest: recommending congressional wilderness designation for two new stand-alone areas and four additions to existing wilderness areas; recommending a congressional National Scenic Area designation for an area around 90,000 acres in size; providing for limited management in all Inventoried Roadless Areas; providing for vegetation management in some potential wilderness areas (those areas with good access and a history of management); and providing remote settings for others. It also offers opportunities for consideration of wind energy to meet domestic energy needs.

Alternative I offers a balance between providing economic benefits and addressing the environmental issues and concerns that have been raised by the public. It is for these reasons and those stated throughout this Record of Decision that I believe that Alternative I provides the direction to manage the Forest in a way that maximizes net public benefits.

Summary of Rationale

Alternative A (1993 Plan) provided sound management guidance for the past 21 years, but new information is available and conditions have changed requiring some updates. We are unlikely to ever receive the funding needed to implement the timber harvest and recreation objectives of Alternative D and it does not respond as well to the demand for additional remote areas.

Alternative C has the least effects on water quality, creates the least openings in the forest canopy (and the least potential for introduction and spread of non-native invasive plants), and manages for the highest level of remote recreation settings. There are places on the Forest that need to be managed in this manner; we need remote core areas of the Forest where management activities are limited. However, climate change and non-native species are two factors that concern me where we cannot rely on natural processes to provide for the resiliency we need to address the current level of impacts and demands on the Forest. There is a clear need for vegetation management activities to restore ecological systems by providing the vegetation structure and composition needed to enhance conditions for many declining species that inhabit the Forest.

Alternatives B, E, F, G, H, and I provide for similar management of ecological systems and protection of soil and water. Alternatives E, G, H, and I add protection for the caves in the Geologic Areas, and Alternatives G, H, and I add lands to the Key Natural Heritage Community Areas. Other key differences between these alternatives are how they address remote areas and energy. Alternatives H and I balance the issue of remote area management and recommendations for congressional designation in a manner similar to that presented by a number of comments. Alternative E does not allow any consideration for wind energy development. Alternative H allows gas development using horizontal drilling, but provides limits on where any drilling is allowed. Alternatives H and I also continue to maintain the high priority on visual resources that was so important in Alternative A. Alternatives H and I provide for a variety of recreation opportunities and seek to maintain sustainable levels of recreation use and access to the Forest.

Alternative I best addresses the issues identified during the planning process. It addresses the needs for change identified in the Analysis of the Management Situation by: (a) maintaining and expanding the large blocks of mature forest and by increasing the objectives for prescribed fire, timber harvest and the creation of open woodland habitat; (b) adopting the Southern Region old growth guidance, making most old growth forest types unsuitable for timber production, but allowing harvest of the two more common, and well distributed old growth forest types; (c) adopting the riparian guidance used on the Jefferson National Forest; (d) updating the list of Management Indicator Species to more closely resemble the Jefferson Forest Plan; (e) creating additional Special

Biological Areas and incorporating the Indiana Bat Protection Areas into the plan; (f) adding a desired condition to restore blight resistant American chestnut; (g) modifying standards regarding soil productivity; (h) identifying reference watersheds; (i) incorporating direction in the Forest Plan to better utilize fire to restore ecological systems; (j) adding a number of caves as Geological Areas; (k) improving direction on non-native invasive species; (l) maintaining or increasing the amount of land suitable for timber production; (m) reducing the number of management prescription areas with an emphasis on vegetation management; (n) adding an objective to decommission roads, rather than having an objective to increase road miles; (o) complying with current roadless rules; (p) adopting the scenery management system; (q) updating the availability of lands for oil and gas leasing; (r) considering private mineral rights when making plan decisions; (s) identifying areas as not suitable for wind energy development; and (t) updating range management direction.

One of the aspects in which Alternatives H and I respond to public issues is incorporating many of the proposals identified in the Stakeholders Group. The Stakeholders Group (see Public and Other Agency Involvement section) consisted of a variety of individuals and groups representing a diverse set of interests in management of the GWNF. They demonstrated that a group of diverse interests could develop a well thought out set of recommendations on proposed land allocations and levels of vegetation management.

Management of the Shenandoah Mountain area between Routes 250 and 33 was an area of much discussion during the planning process. As a result of those discussions, I have decided to recommend this area as a National Scenic Area for congressional designation. Since National Scenic Area management is determined by the authorizing legislation, we feel that it is very important to emphasize the need to retain some management activities in this large block of land. We need the ability to use prescribed fire for restoration purposes, maintain or enhance wildlife habitat improvements, maintain or enhance recreation opportunities and maintain several dams located in the area.

With respect to the wilderness and national scenic area recommendations, I recognize that Augusta, Rockingham, and Bath County Boards of Supervisors have passed resolutions requesting that no additional wilderness be designated in their respective counties. Rockingham County has, however, recently endorsed a collaborative approach to examining wilderness designation in conjunction with active management activities in other areas of the GWNF. These types of collaborative approaches will be important in any future discussions of congressional designations. We greatly appreciate the cooperation of the local counties in our management activities and believe that their support of these important land designations is critical to making them successful. Until Congress acts, the Revised Plan will manage these identified areas as Recommended Wilderness and a Recommended National Scenic Area.

While I recognize the analysis in the FEIS illustrates that adverse impacts from oil and gas development can be appropriately mitigated, there is insufficient reason at this time, due to the combination of factors previously stated, to make any new federal lands available for oil and gas development.

Alternative I does the best job of incorporating scientific analysis and responding to the views of American citizens, legal mandates, national direction and national policy. This alternative was developed in response to comments, new information, and further investigation and analysis by staff from the Forest Service and our cooperating agency, the DOI Bureau of Land Management (BLM). By selecting Alternative I, the Revised Plan is also approved that describes in detail the goals, objectives, desired conditions, standards, management areas and prescriptions, lands suitable for various multiple uses, and lands recommended for congressional designation.

Summary of Key Changes from 1993 Current Plan to Final Revised Plan

Resource Area	Direction of Change	From 1993 Current Plan	To Revised Plan
Riparian buffers	Increases	66 feet	100 feet
Area suitable for timber production	Increases	350,000 acres	452,000 acres
Annual objective for timber regeneration	Increases	2,400 acres	1,800 to 3,000 acres
Annual objective for prescribed fire	Increases	3,000 acres	12,000 to 20,000 acres
Biological and geological areas	Increases	80,000 acres	121,000 acres
Wilderness	Increases	40,000 acres - Existing	70,000 acres – Existing and Recommended
National Scenic Areas	Increases	8,000 acres	75,000 acres – Existing and Recommended
Areas allocated for remote settings	Increases	251,000 acres	370,000 acres
Minimum road system needed	Decreases	1,700 miles	1,500 miles
Lands administratively available for gas leasing	Decreases	995,000 acres	10,000 acres

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The Council on Environmental Quality defines the environmentally preferable alternative as:

“...the alternative that will promote the national environmental policy as expressed in NEPA’s section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.”

By this definition, Alternative I is the environmentally preferable alternative since it actively manages for healthy and resilient ecosystems, provides a high level of watershed resilience against insects, diseases and wildfire, protects and restores ecological systems, makes limited lands suitable for wind energy development and does not allow new federal oil and gas leasing. It is very similar to Alternatives G and H except for how it addresses wind and gas energy development. Alternative C allows for fewer ground-disturbing activities, but this restriction also prevents activities that will restore ecological conditions needed by many species.

SCIENCE CONSISTENCY

The Forest Interdisciplinary Team utilized current science in the development of the Revised Plan and in the analysis of effects in the Final EIS. In the development of standards for protecting water, we relied heavily on the Federally Listed Threatened and Endangered Mussel and Fish Conservation Plan that compiled water quality and riparian management research, including State Best Management Practices. That document was reviewed by the U.S. Fish and Wildlife Service in 2003 and the resulting management standards were incorporated into the 2004 Jefferson Forest Plan and now into the GWNF Revised Plan.

We utilized the Ecological Sustainability Evaluation Tool to structure and document our analysis of effects on species and to develop desired conditions, management objectives and standards in the

Revised Plan. This tool was built upon principles developed by The Nature Conservancy in their Conservation Action Planning Workbook. We identified the terrestrial ecological systems on the GWNF using NatureServe's International Ecological Classification Standards. We also evaluated these systems in terms of the Virginia Natural Heritage Program's Classification of Ecological Community Groups. Desired conditions for each of these ecological systems were based on the Vegetation Dynamics Models from the LANDFIRE program. Estimates of the extent of each ecological system were based on the ecological mapping work done in cooperation with The Nature Conservancy as described in *Ecological Zones on the George Washington National Forest First Approximation Mapping* (Simon 2011). The second step in the sustainability analysis was to identify those species on the GWNF whose populations are low, declining, under threat, or of other concern. We utilized NatureServe, lists of state threatened or endangered species, state comprehensive wildlife strategies, and personal contacts with recognized authorities on these species. We also used information from state wildlife and natural heritage agencies to identify special biological areas and sensitive caves.

We used the Forest Service Scenery Management System to evaluate impacts on scenery and to develop desired conditions and management strategies for managing the scenic resources. We used the Guidance for Conserving and Restoring Old Growth Forests in the Southern Region.

The Southern Research Station's Template for Assessing Climate Change Impacts and Management Options (TACCIMO) and the 2008 Final Report of the Virginia Governor's Commission on Climate Change were two key references in our development of desired conditions and management approaches in relation to climate change.

In developing the analysis of gas leasing options, the Interdisciplinary Team relied heavily on the Reasonably Foreseeable Development Scenario developed by the BLM, the analysis and compilation of information contained in the New York State Environmental Impact Statement on The Oil, Gas and Solution Mining Regulatory Program, and the BLM Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (commonly called the Gold Book).

FINDINGS RELATED TO OTHER LAWS AND AUTHORITIES

I have considered the statutes governing management of the George Washington National Forest and I believe that this decision represents the best possible approach to both harmonizing and reconciling the current statutory duties of the Forest Service.

Clean Air Act

As discussed in the FEIS, Chapter 3, Affected Environment and Environmental Consequences, all lands managed by the GWNF are currently in attainment with National Ambient Air Quality Standards. According to the Clean Air Act of 1990 and the Organic Administration Act 1897, the Forest Service has the responsibility to protect the air, land, and water resources from the impacts of air pollutants produced within the Forest boundaries and to work with states to protect those same resources from degradation associated with the impacts of air pollution emitted outside of the Forest. Design Criteria are presented in Chapter 4 of the Revised Plan to address management activities and compliance with air quality statutes. There are currently several New Source Performance Standards, a Memo of Understanding with the BLM and National Park Service as to how oil and gas facilities on federal lands shall be reviewed and established, and national emission standards for hazardous air pollutants that are directly related to emission limits from oil and gas production facilities. As such, companies would have to comply with all existing and future state and Federal air quality rules and regulations in order to construct and continue operation.

Clean Water Act

The intent of the Clean Water Act is to restore and maintain the integrity of waters. The Revised Plan contains forestwide direction to ensure management activities maintain or improve aquatic conditions. The Revised Plan contains direction to ensure all projects meet or exceed State Best Management Practices prepared under guidance of the Clean Water Act.

Endangered Species Act

A Biological Assessment was prepared to evaluate the potential effects of the Revised Plan on federally listed species and their habitat. The Biological Assessment concluded that implementation of Alternative I for the Revised Plan would have “no effect” for the Madison Cave isopod; “likely to adversely affect” for the Indiana bat; and “not likely to adversely affect” for the Virginia northern flying squirrel, Virginia big-eared bat, James spiny mussel, Virginia sneezeweed, swamp-pink, northeastern bulrush, smooth coneflower, and the shale barren rockcress. The Biological Assessment was transmitted to the U.S. Fish and Wildlife Service on July 5, 2012, with a request to initiate formal consultation.

In the June 12, 2013 Biological Opinion (as supplemented by the letter dated March 5, 2014), the U.S. Fish and Wildlife Service (FWS) concurred with the determinations on the Madison Cave isopod, Virginia big-eared bat, James spiny mussel, Virginia sneezeweed, swamp-pink, northeastern bulrush, smooth coneflower, and the shale barren rockcress. During the consultation process, the Virginia northern flying squirrel was delisted. We have not changed the discussion or analysis in the FEIS in regard to the status of the Virginia northern flying squirrel, since its status does not affect the protection and management of this species in any of the alternatives.

In regard to the Indiana bat, the U.S. Fish and Wildlife Service concluded that the Revised Plan is not likely to jeopardize the continued existence of the Indiana bat and is not likely to destroy or adversely modify designated critical habitat. The FWS anticipates incidental take of the Indiana bat could occur from implementation of timber harvest, wildlife habitat management, special use activities, and prescribed burns. The Biological Opinion from the FWS identifies reasonable and prudent measures necessary and appropriate to minimize take of the Indiana bat.

In order to be exempt from the prohibitions of section 9 of the ESA, the Forest Service must comply with the terms and conditions of the incidental take statement in the Biological Opinion, which implement the reasonable and prudent measures. These terms and conditions are non-discretionary. A copy of the Biological Opinion’s Incidental Take Statement (with its accompanying terms and conditions) is included in Appendix J of the Revised Forest Plan.

Forest and Rangeland Renewable Resources Planning Act (RPA) and Forest Service Strategic Plan, 2007-2012

National Forest Management Act regulations at 36 CFR 219.12(f)(6) (1982) state that at least one alternative be developed which responds to and incorporates the Renewable Resource Planning Act (RPA) program tentative resource objectives. The Government Performance and Results Act (GPRA) of 1993 requires federal agencies to prepare strategic plans, which duplicated much of the RPA Program. The Agency no longer prepares an RPA Program but does periodically update its strategic plan that contains goals, outcomes, performance measures, and strategies that apply to management of the National Forest System. The Agency continues to periodically update the RPA Assessment, which presents national and regional analyses of the renewable resource situation, including projections of supply and demand. However, neither the RPA Assessment nor the Forest Service Strategic Plan contains recommended output targets applicable to individual National Forests. The alternatives evaluated in the FEIS incorporate the broad, strategic objectives of the Forest Service Strategic Plan 2007-2012.

National Environmental Policy Act

The Forest has compiled and generated much information relevant to the effects of each of the alternatives considered in the FEIS. I find the environmental analysis and public involvement process complies with each of the major elements of the requirements set forth by the Council on Environmental Quality for implementing NEPA (40 CFR 1500-1508). These include: 1) considering a broad range of reasonable alternatives; 2) disclosing cumulative effects; 3) using best scientific information; 4) consideration of long-term and short-term effects; and 5) disclosure of unavoidable adverse effects.

The decision here does not directly authorize any new ground-disturbing activities or projects. Future ground-disturbing activities and projects will be subject to additional site-specific environmental analysis that will tier to the FEIS and follow applicable environmental analysis, public involvement and administrative review procedures. Projects will be designed to be consistent with the Revised Plan.

The Revised Plan has adopted all practicable means to avoid or minimize environmental harm. These means include provisions for providing those ecological conditions needed to support biological diversity and standards and guidelines to mitigate adverse environmental effects that may result from implementing various management practices.

The Revised Plan includes monitoring requirements and an adaptive management approach to assure needed adjustments are made over time.

Alternatives were developed based on the purpose and need, the significant issues, and public comments. A total of nine alternatives were considered in detail, including the No Action Alternative as required by NEPA. Other Alternatives were considered but eliminated from detailed study. The range of alternatives is appropriate given the scope of the proposal, the public issues expressed, and the purpose and need for action.

National Forest Management Act

The National Forest Management Act (NFMA) and its implementing regulations specify a number of requirements for forest plan development. This Revised Plan was developed pursuant to the 36 CFR 219 planning regulations that were in effect prior to November 9, 2000, which are commonly referred to as the "1982 planning regulations." While this Record of Decision is signed under the 36 CFR 219 regulations that became effective on May 9, 2012 (*Federal Register*, April 9, 2012), the transition language of 36 CFR 219.17(b)(3) states that for "plan revisions that were initiated before May 9, 2012, the responsible official may complete and approve the ... plan revision in conformance with the provisions of the prior planning regulation, including its transition provisions." It is within the transition provisions of the previous planning regulation that allows for the use of the "1982 planning regulations" (see 36 CFR 219, published at 36 CFR parts 200 to 299, revised as of July 1, 2010).

Congress has mandated through the NFMA that forest plan revisions assure that plans provide for multiple use and sustained yield of products and services. Not every use can or should occur on every acre. Our goal is to blend multiple use of the Forest in such a way that is sustainable and best meets the needs of the American people. The GWNF developed an integrated Land and Resource Management Plan using a systematic interdisciplinary approach to integrate consideration of physical, biological, economic, and other sciences. The Revised Plan maximizes net public benefit and contains strong conservation measures to protect, maintain, and improve soil and water resources, wildlife habitat, and other forest resources within a multiple use context. The Revised Plan complies with each of the NFMA and regulatory requirements, as explained in this Record of Decision, accompanying Final EIS, and Appendices.

National Historic Preservation Laws

The Revised Forest Plan is a programmatic action and does not authorize any site-specific projects. The Plan does designate Special Interest Areas that include areas that will be managed with an emphasis on historic and cultural preservation and protection. Projects undertaken in response to direction in the Forest Plan will fully comply with the Plan Standards and Guidelines as well as the laws and regulations that require consideration of cultural resources. The Forest Plan contains direction for cultural resource management, including direction to integrate cultural resource management with other resource management activities. The Virginia and West Virginia State Historic Preservation Offices were consulted on the development of this Plan. The Forest Plan tiers to the Programmatic Agreement among the USDA Forest Service, the Virginia State Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding the process for compliance with Section 106 of the National Historic Preservation Act. It is my determination that the Revised Forest Plan complies with the National Historic Preservation Act, the Archaeological Resources Protection Act and other statutes that pertain to the protection of cultural resources.

Roadless Area Conservation Rule

Management activities are subject to the terms of the 2001 Roadless Area Conservation Rule (RACR). During the development of the issues and alternatives in this EIS, the 2001 RACR was subject to litigation and conflicting judicial rulings. However, as of March 1, 2012, (which was after the George Washington NF's Draft EIS and Proposed Revised Plan had been released) the conflicts have been resolved and the Roadless Rule has been uniformly affirmed and in effect nationwide, as otherwise provided for by regulation. Consequently, the 2001 RACR's timber harvesting and road building prohibitions now apply to all Inventoried Roadless Areas as depicted in the maps associated with the 2000 Final Environmental Impact Statement for the RACR (maintained by the Chief's office and available at: www.fs.usda.gov/roadmain/roadless/home). While the management direction that was developed in Alternatives A, B, D, and E allow timber harvest and road construction in some IRAs, the 2001 RACR does not generally allow such activities to be implemented. Management direction in Alternatives C, F, G, and H and the Selected Alternative (I), is consistent with the 2001 RACR.

Chesapeake Bay (Executive Order 13508)

This 2009 Executive Order was enacted to protect and restore the health, heritage, natural resources, and social and economic value of the 'national treasure' Chesapeake Bay. This watershed is America's largest estuarine ecosystem. As the largest federal landowner in the watershed, the GWNF has a key role in fulfilling the intent of this Executive Order. The *Strategy for Protecting and Restoring the Chesapeake Bay Watershed* identifies four priorities for federal agencies in the watershed: (1) restore clean water (restoration of water quality, stream restoration, agriculture conservation); (2) recover habitat (wetlands restoration, expanded forest buffers, improved fish passage); (3) sustain fish and wildlife (sustainable populations of oysters, blue crab, brook trout, black ducks); and (4) conserve land and increase public access (expanded land conservation and public access to the Bay and its tributaries).

Other Laws and Executive Orders

I find that the selected alternative, Alternative I, is in compliance with the following laws and Executive Orders, as documented in the FEIS:

- Energy Policy Act of 2005
- Environmental Justice (Executive Order 12898)
- Healthy Forest Restoration Act

- Invasive Species (Executive Order 13112)
- Migratory Bird Treaty Act, Golden and Bald Eagle Act and Executive Order 13186
- Mineral Leasing Act as amended
- Mining and Minerals Policy Act of 1970
- Wetlands and Floodplains (Executive Order 11988 and 11990)

IMPLEMENTATION

The direction in this Revised Plan will become effective 30 days after the publication of the Notice of Availability (NOA) of the Final Environmental Impact Statement in the Federal Register (36 CFR 219.10(c)(1), 1982 regulations).

Forest plans are permissive in that they allow, but do not mandate, the occurrence of certain activities. Following the applicable NEPA procedures, site-specific analysis of proposed activities will occur before any project is accomplished. The outputs specified in the Revised Plan are only estimates and projections based on available information, inventory data, and assumptions.

The Revised Plan direction will apply to all projects that have decisions made on or after the effective date of this Record of Decision.

The National Forest Management Act (NFMA) requires that when forest plans are revised, resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be revised as soon as practicable to be "consistent" with the current Land and Resource Management Plan [16 U.S.C. 1604(i)]. Any revisions of these instruments are "subject to valid existing rights."

There are many management actions that have decisions made before the effective date of this ROD. These pre-existing actions were considered part of the baseline in developing the Revised Plan. The projected effects of these actions are part of the cumulative effects analyses documented in the FEIS and Biological Assessment for the Revised Plan, and an additional analysis shows that the continued implementation of these previously decided actions will not foreclose the ability to meet the desired conditions and objectives of this Revised Plan.

I have not identified any need to modify any agency actions involving permits, contracts, or other instruments for the use and occupancy of National Forest System lands due to conflicts with the Revised Plan. These actions will be implemented according to the terms of the applicable instrument. However, should the need arise, the Forest Supervisor has the discretion to modify these permits, contracts, or other instruments for the use and occupancy of National Forest System lands.

After approval of the Revised Plan, the Forest Supervisor shall ensure that future permits, contracts, and other instruments for the use and occupancy of the affected National Forest System lands will be consistent with the Revised Plan.

MONITORING AND EVALUATION

Monitoring and evaluation is used to assess the degree to which on-the-ground management is maintaining or making progress toward the desired conditions and objectives in the plan. The monitoring program is described in Chapter 5, "Implementation and Monitoring," of the Revised Plan. This monitoring program was developed with public participation and focuses on key plan components where management projects and activities are likely to cause a change over time.

Specific monitoring questions are identified and directly linked to Revised Plan desired conditions, objectives, standards, and specific regulatory requirements. Only selected objectives and standards

are monitored. Relevancy to issues, compliance with legal and agency policy, scientific credibility, administrative feasibility, long- and short-term budget considerations, and impact on work force all influence monitoring priorities.

Monitoring information will be evaluated and used to update inventory data, improve current and future mitigation measures, and assess the need to change the Revised Plan. Evaluation of monitoring results is directly linked to the decision maker's ability to respond to changing conditions, emerging trends, public concerns, and new information and technology. No single monitoring item or parameter automatically triggers a change in Revised Plan direction. An interdisciplinary approach is used to evaluate information and decide what changes are needed.

PLAN AMENDMENTS

All activities, many of which are interdependent, may be affected by annual budgets. However, the desired conditions, objectives, standards, management prescriptions, and monitoring questions described in the Revised Plan will not change unless the Plan is amended. The Plan may be amended following the processes and procedures in accordance with 36 CFR 219.13.

Forest plans are normally revised on a 10-year cycle with anticipated completion of the revision occurring 10-15 years after plan approval. However, the amendment process provides the flexibility to adapt the decisions made today to the realities of tomorrow. There will be opportunities for the public to be involved in any future changes to the Revised Plan. Forest plan amendments will be used when necessary, to keep the GWNF Revised Plan current and help the Forest adapt to new information or changing conditions.

ADMINISTRATIVE REVIEW

This decision is subject to administrative review. According to 36 CFR 219.17(b)(3), if the responsible official chooses to complete an ongoing planning process under the provisions of the prior planning regulation, the responsible official can choose to allow for either an administrative appeal or can follow the objection process identified in 36 CFR 219 Subpart B. For this decision, I have decided to use the administrative appeal process. Under the prior planning regulations at Appendix A to 36 CFR 219.35 (see 36 CFR part 219, published at 36 CFR parts 200 to 299, revised as of July 1, 2010), when the option is made to proceed under the 1982 regulations and to follow the administrative appeal process, the "Optional Appeal Procedures Available during the Planning Rule Transition Period" (the former 36 CFR 217 appeal procedures that were in effect prior to November 9, 2000) are to be used.

A written notice of appeal must be filed in duplicate and postmarked or received within 90 days after the date the legal notice of this decision is published in the newspaper of record (*Roanoke Times*). The appeal must clearly state that it is a Notice of Appeal being filed pursuant to the Optional Appeal Procedures. Appeals must meet the content requirements of Section 9 of the Optional Appeal Procedures, which are available for review at:

<http://www.fs.fed.us/emc/applit/includes/PlanAppealProceduresDuringTransition.pdf>

Appeals must be filed with the Chief of the Forest Service at:

For UPS and FedEx deliveries:

USDA - Forest Service
Attn: Administrative Reviews (EMC/2nd Floor Central)
201 14th Street SW
Washington, DC 20250 *(Note: If a phone number is needed for carrier delivery, use 202-205-1449)*

For USPS mail:

USDA - Forest Service
Attn: Administrative Reviews
1400 Independence Ave. SW
Mailstop #1104
Washington, DC 20250

Appeals may also be faxed (Fax number is 202-649-1172) or appeals may be mailed electronically in a common digital format to:

appeals-chief@fs.fed.us

Requests to stay the approval of this Revised Plan shall not be granted (Section 10 of the Optional Appeal Procedures).

Final decisions on proposed projects implementing the Revised Plan will be made on a site-specific basis using appropriate analysis and documentation in compliance with NEPA. Project decisions may be subject to an objection process at that time.

Recommendations for designations such as additions to the National Wilderness System or designations as National Scenic Areas are preliminary administrative recommendations that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and/or the President of the United States. The Congress has reserved the authority to make final decisions on wilderness on federal lands and is responsible for legislation creating national scenic areas; therefore, wilderness and national scenic area recommendations in the Revised Plan are not appealable under the agency's administrative appeal procedures (Section 4 of the Optional Appeal Procedures).

CONTACT PERSON

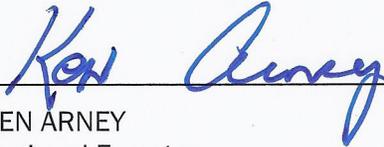
For additional information concerning this decision or the Forest Service appeal process, contact:

H. Thomas Speaks, Jr. or Kenneth Landgraf
Forest Supervisor Planning Staff Officer

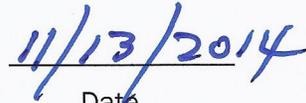
George Washington and Jefferson National Forests
5162 Valleypointe Parkway
Roanoke, VA 24018
540-265-5100

APPROVAL

I approve the selection of Alternative I for the Revised Land and Resource Management Plan for the George Washington National Forest. This Revised Plan has been built on a strong foundation of science along with collaboration and engagement with members of the public, conservation organizations and many cooperating agencies. I look forward to continued collaboration as we implement this plan into the future.



KEN ARNEY
Regional Forester
Southern Region, USDA Forest Service



Date