CHAPTER 2 ALTERNATIVES

INTRODUCTION

This chapter describes the seven alternatives considered in detail in this Environmental Impact Statement, as well as the process used to develop alternatives. The alternatives suggest a variety of scenarios for managing the George Washington National Forest and how they respond to the significant issues described in Chapter 1. This chapter also explains the alternative development process, provides reasons for why some alternatives were originally considered and then later eliminated from detailed study, describes those alternatives considered in detail, and compares how each alternative responds to the significant issues.

DEVELOPMENT OF ALTERNATIVES

National Forest Management Act regulations at 36 CFR 219.12(f) state that the interdisciplinary team will formulate a broad ranges of reasonable alternatives and that the primary goal in formulating alternatives, besides complying with NEPA procedures, is to provide an adequate basis for identifying the alternative that comes nearest to maximizing net public benefits, consistent with the resource integration and management requirements of 219.13 through 219.27.

The alternative development process began with the analysis of the need for change described in the Analysis of the Management Situation. From the need for change came an alternative that was briefly described in the Notice of Intent along with the current management, or No Action alternative. The No Action alternative became Alternative A and the alternative developed from the need for change analysis became Alternative B. After the scoping period initiated with the Notice of Intent (March 2010) was completed, the Interdisciplinary Team identified the significant issues. The Interdisciplinary Team then identified alternative ways to address the issues and a range of responses to the issues. This range of responses to the issues was then put together into Alternatives C, D, E and F. A public workshop was held with the Interdisciplinary Team to discuss the alternatives and the alternatives were further refined based on those discussions. Another public workshop was held in October 2010 to address the alternatives. The Forest Leadership Team and Interdisciplinary Team then met to discuss the alternatives to find a preferred alternative. The result of that meeting, and further discussions with the Responsible Official (Regional Forester), resulted in the development of Alternative G as the preferred alternative upon which the Draft Forest Plan is designed.

Public input supported a Forest Plan based on reasonable budgets so the alternatives were developed with realistic budget flexibilities and workforce capabilities in mind. All alternatives were also required to meet the purpose and need identified in Chapter 1 of the DEIS and address one or more of the significant issues.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Some comments were made that alternatives should be developed that maximize certain resources 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 some 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 Forest is capable of producing a sustained yield of a much higher level of timber production (as shown in the Maximum Timber Volume Benchmark in Appendix B), this alternative was not considered in detail, due to concerns that expected budgets could not support that level of production.

Another alternative that was proposed was to have a separate alternative that addresses the actual accomplishments achieved during the past implementation of the current plan. Since many aspects of the current plan were not achieved, this alternative would be different than Alternative A which represents the 1993 Forest Plan direction, rather than actual implementation of the Forest Plan. Rather than developing a separate alternative, this analysis identifies the places where Alternative A differs between its direction and its implementation.

CONSISTENCY WITH THE RENEWABLE RESOURCES PLANNING ACT

National Forest Management Act regulations at 36 CFR 219.12(f)(6) 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 this DEIS incorporate the broad, strategic objectives of the Forest Service Strategic Plan 2007-2012.

DEVELOPMENT OF MANAGEMENT PRESCRIPTIONS

Developing a variety of Management Prescriptions with different desired conditions and standards to apply to distinct areas of the Forest was the primary method used to formulate a range of alternatives to address the significant issues. The management prescriptions were largely derived from the management prescriptions used for the Jefferson Forest Plan. The same naming conventions were used and a few changes were made to the desired conditions and standards. Table 2-1 lists the full set of management prescriptions allocated in the range of alternatives.

Table 2-1. Management Prescriptions Allocated in the Range of Alternatives

Prescription Code	Prescription Description
1A	Designated Wilderness
1B	Recommended Wilderness Study
2C2	Eligible Wild and Scenic River-Scenic
2C3	Eligible Wild and Scenic River-Recreation
4A	Appalachian Trail
4B1	Research Natural Area
4C1	Geologic Area
4D	Special Biological Area
4D1	Key Natural Heritage Community Area
4F	Mt Pleasant National Scenic Area
4FA	Recommended National Scenic Area
5A	Administrative Site
5B	Communication Site
5C	Utility Corridor
7A1	Scenic Byway
7B	Scenic Corridors and Viewsheds
7C	ATV Use Area
7D	Concentrated Recreation Areas
7E	Dispersed Recreation Areas
7E1	Dispersed Recreation Areas-Unsuitable for Timber Production
7E2	Dispersed Recreation Areas-Suitable for Timber Production
7F	Blue Ridge Parkway
7G	Pastoral Landscapes
8A1	Mix of Successional Habitats
8A1U	Mix of Successional Habitats-Unsuitable for Timber Production
8B	Early Successional Habitats
8BU	Early Successional Habitats-Unsuitable for Timber Production
8C	Black Bear/Remote Habitats
8CU	Black Bear/Remote Habitats-Unsuitable for Timber Production
8E4a	Indiana Bat-Primary Conservation Area
8E4b	Indiana Bat-Secondary Conservation Area
8E7	Shenandoah Mtn Crest-Cow Knob Salamander
9A1	Source Water Watershed Protection
10B	Timber Production
10BU	Timber Production-Unsuitable
12D	Remote Backcountry
13	Mosaics of Habitat-Suitable for Timber Production
13U	Mosaics of Habitat-Unsuitable for Timber Production

ALTERNATIVES CONSIDERED IN DETAIL

ALTERNATIVE A - NO ACTION ALTERNATIVE

The 36 CFR 219.12(f)(7)) 1982 regulations state that “at least one alternative shall reflect the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues. Pursuant to NEPA procedures, this alternative shall be deemed the "no action" alternative.”

Alternative A represents the 1993 Forest Plan, as amended through ten amendments. 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. While Alternative A represents the 1993 Plan, it is important to note that annual budgets affect implementation of a Forest Plan. The Analysis of the Management Situation contains a table of accomplishments during the life of the 1993 Forest Plan. In this DEIS, where annual accomplishments have varied substantially from Forest Plan direction and assumptions, the actual accomplishment level will be noted.

The ten amendments to the 1993 Forest Plan included: Fore Mountain was added to the communication sites in Management Area 20; Laurel Fork Special Management Area was made no longer available for oil and gas leasing; Mount Pleasant was designated as a National Scenic Area; the Biological Opinion for the Indiana Bat was adopted; and Jerkemtight Road was relocated and dropped as featured Off-Highway Vehicle route; and the remaining amendments were errata or clarifications. The Priest and Three Ridges recommended wilderness study areas have been designated as Wilderness since 1993.

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.

The following are highlights of Alternative A:

ACCESS

- Road construction 3-8 miles/year (Actual road construction has averaged 1.8 miles/year)

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Streamside management zones (66' along perennial and 33' along intermittent streams)
- Municipal watersheds identified, but not highlighted; impaired streams and reservoirs not recognized.

RECREATION

- Three existing ATV/OHV use areas; one additional area planned at Archer Run
- Large increase in trail construction
- Featured OHV routes identified and managed for OHV use
- New developed recreation and expansions of existing sites
- Use of adopted ROS settings

WILDERNESS/ROADLESS

- One recommended wilderness study area remains - St Mary's Addition (South)
- Portions of the Inventoried Roadless Areas are allocated to active management (9%), rest allocated to remote backcountry, special biological areas.

- Remote backcountry prescriptions are not suitable for timber harvest, but do allow some salvage harvest. Road construction is generally prohibited, with limited exceptions.
- About 55% of the potential wilderness areas are in remote settings.

TIMBER HARVEST

- ASQ is 33 mmbf/year. Annual harvest program of 3,000 acres. Suitable acres are 348,000. (Actual average harvest program has been 1,525 acres/year)
- Utilize a management area with timber as primary management objective

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional based on biodiversity, wood product demand, balanced age class concerns, increased game populations

TERRESTRIAL DIVERSITY

- Separate management areas for wildlife: early successional, remote habitat, mosaics of habitat, small game/watchable wildlife
- Special Biological Areas around 90,000 acres

OLD GROWTH

- No old growth management area.
- Old growth defined by Forest derived definitions.
- Allowed to harvest on suitable ground in old growth forest type - Dry-Mesic Oak

FOREST HEALTH

- Gypsy moth is main focus; use of Integrated Pest Management techniques

WIND

- The Plan has no specific direction for wind development

OIL AND GAS

- Approx 960,000 acres are available for leasing under standard or controlled surface occupancy stipulations
- No direction for Marcellus shale development

ECONOMICS AND LOCAL COMMUNITY

- Mix of ecosystem services and commodity outputs

FIRE

- Prescribed fire program is 3,000 acres/year. (Actual average prescribed burning has been 4,666 acres/year)
- Use of wildfire is allowed to achieve forest goals but no criteria developed

CLIMATE CHANGE

- No direction is specifically related to climate change.
- About 2/3 of Forest is managed to move towards late successional conditions.
- Active management of vegetation structure and composition is predominantly through timber harvest activities.
- Much of Forest is available for development of natural gas production.
- Soil and water improvement are important, but not prioritized by any specific watersheds.

ALTERNATIVE B

This alternative is based on changes to the current plan identified in the Analysis of the Management Situation. The analysis was based on an IDT evaluation of the 1993 Forest Plan direction, monitoring and evaluation results, new policies, best available science and an attempt to balance public issues that were identified as of March 2010. The need to change items that were listed in the Notice of Intent in March 2010 to begin preparation of the EIS included the following: 1) Identify desired conditions and objectives to maintain the resilience and function of nine identified 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; 3) Move the remote backcountry boundaries to match the Inventoried Roadless Area boundaries; 4) Portions of a few Inventoried Roadless Areas (about 8,000 acres), where the boundary of the Inventoried Roadless Areas is along existing roads and the adjacent forest has been actively managed for many years, are proposed to remain in active management rather than in remote backcountry; 5) Manage the remote backcountry areas with standards to closely mirror the management restrictions on road construction and timber harvest that were described in the 2001 Roadless Area Conservation Rule, except that salvage of dead and dying trees without road construction is allowed if the roadless character of the area is maintained.

The following are highlights of Alternative B

ACCESS

- No net increase in open road miles.
- Road construction of about 1 mile per year
- Road decommissioning 16 miles/year for the first decade

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian Areas same as Jefferson NF (100' on perennial, 50' on intermittent streams) in all watersheds
- Drinking water supplies identified. Drinking water watersheds and watersheds above impaired streams and reservoirs negatively affected by acid deposition are a priority for restoration.

RECREATION

- Three existing ATV/OHV use areas; drop planned Archer Run area
- No net increase in trail miles or maintenance (can increase but would also have to decommission)
- Specific roads not featured for licensed OHV use but miles would stay at current level
- No new developed recreation sites; few expansions of existing sites
- Semi-primitive areas outside wilderness, recommended wilderness or backcountry areas not maintained through plan direction

WILDERNESS/ROADLESS

- Recommend St Mary's Addition (West), Little River, Rich Hole addition, and Ramsey's Draft addition (total 20,000 acres) for wilderness
- Portions of the Inventoried Roadless Areas are allocated to active management (4%), rest allocated to remote backcountry, special biological areas.
- Remote backcountry managed to limit timber harvest and road construction in a manner similar to Roadless Area Conservation Rule of 2001, except to allow salvage harvest.
- Most of the additional Potential Wilderness Areas in current active management would remain in active management.

TIMBER HARVEST

- ASQ around 33 mmbf/yr.
- Annual harvest program of 1,800-3,000 acres.
- Suitable acres around 476,000 acres.
- Primary purpose of timber harvest is to support other resource objectives

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional habitat is based primarily on ecological objectives, restoration needs

TERRESTRIAL DIVERSITY

- One broad management area for wildlife habitat emphasis
- About 114,000 acres of Special Biological Areas

OLD GROWTH

- No old growth management area. Old growth defined by Regional definitions.
- Most of the stands meeting the old growth definition are unsuitable for timber production. Areas in the most common forest type (Dry-Mesic Oak Forests) that are on lands suitable for timber production could be considered for harvest.

FOREST HEALTH

- Increased recognition of non-native invasive species; use of Integrated Pest Management techniques

WIND

- Areas not suitable for wind development: Wilderness, recommended wilderness, National Scenic Area, Special Biological Areas, Indiana bat protection areas, Appalachian Trail corridor, remote backcountry areas

OIL AND GAS

- Moderate amount of areas (~700,000 acres) compared to current plan are available for leasing under standard or controlled surface occupancy stipulations
- Horizontal drilling (Marcellus shale development) allowed on all available acres but specific standards related to hydrofracking would be used

ECONOMICS AND LOCAL COMMUNITY

- Similar to Alternative A

FIRE

- Prescribed fire program between 12,000 and 20,000 acres/year
- Utilize fire to attain ecological objectives for biodiversity when appropriate

CLIMATE CHANGE

- Impaired streams and reservoirs are priority for restoration; actively restore (chestnut, yellow pine, hemlock, spruce, riverfront hardwoods, beaver meadows, fire dependent and adapted communities, open woodlands, TESLR species).
- Timber harvest, fire and grassland/shrubland maintenance are used to manage vegetation structure and composition to improve resiliency of the ecosystems.

ALTERNATIVE C

In this alternative, restoration and maintenance of sustainable ecological systems is 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 is for the protection of Forest resources and meeting legal requirements, with limited exceptions. Recreation emphasis is on semi-primitive settings and opportunities. This alternative features the most area recommended for wilderness study. The character will 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.

The following are highlights of Alternative C:

ACCESS

- Extensive road closure or decommissioning; but some access is still needed for non-motorized activities
- No road construction
- Road decommissioning 28 miles/year for first decade

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian areas are the same as Jefferson NF (100' on perennial, 50' on intermittent streams) but buffers would be larger in source drinking watersheds and along impaired streams
- Management areas assigned for drinking water watersheds as identified in comments. These management areas and watersheds above impaired streams and reservoirs are a priority for restoration and include management activity restrictions.

RECREATION

- Three existing ATV/OHV use areas; drop planned Archer Run area
- Increase in trails for non-motorized users but no net increase in maintenance (by relocating or decommissioning unsustainable trails)
- No management of roads for OHV use
- No new developed recreation sites, closure of some sites
- Maintain inventoried semi-primitive acres and move towards a primitive ROS setting in Shenandoah Mountain area

WILDERNESS/ROADLESS

- High level of recommended wilderness (380,000 acres), including all of the Potential Wilderness Areas
- Remote backcountry managed to limit timber harvest and road construction in manner similar to Roadless Area Conservation Rule of 2001.

TIMBER HARVEST

- No ASQ or suitable land base
- No commercial timber program but incidental harvest may occur

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Creation of early successional habitat through harvest of trees very limited, only for Threatened and Endangered Species and limited Sensitive species habitat

TERRESTRIAL DIVERSITY

- No management area defined for wildlife or timber since most of the forest will provide for forest interior species and late-successional species; emphasis is to minimize fragmentation and edge effects
- About 114,000 ac of Special Biological Areas; add wood turtle habitat to Special Biological Areas

OLD GROWTH

- No old growth management area. Old growth defined by Regional definitions.
- No harvest of any stands meeting the definition of old growth forest

FOREST HEALTH

- Heavy emphasis on prevention of the introduction and minimizing the spread of non-native invasive species, especially in remote settings. Increased emphasis on non-motorized recreation may require aggressive prevention measures in concentrated use areas. Limited use of herbicides and insecticides

WIND

- No wind development allowed.

OIL AND GAS

- No areas available for oil and gas leasing.

ECONOMICS AND LOCAL COMMUNITY

- Fewer commodity outputs, focus is on remote non-motorized recreation and ecosystem services outputs

FIRE

- Very limited use of prescribed fire, for TES species
- Allow wildfires to burn as much as possible

CLIMATE CHANGE

- Passive restoration through natural processes; manage most of the forest to move towards late successional conditions;
- Reduction of access to the forest to limit introduction and spread of invasives;
- Decommissioning of roads to reduce potential sedimentation in streams;
- Less fragmentation to increase connectivity of migration corridors for species that rely on mature, closed canopy forests

ALTERNATIVE D

In this alternative, restoration and maintenance of natural ecological systems would use practices that also produce a higher level of commodities and offers 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. A mixture of timber outputs would be focused on species/product combinations with strong demand. 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 biomass. Public access (travelways, use corridors, waterways, and trails - including off-highway vehicles) would be increased in high-use areas and/or improved to provide for more opportunities for recreation and other forest uses to occur when compatible with other resources. Additional roads may be needed to support the production of wood products and natural gas development. Roads would still be analyzed for decommissioning but opportunities for using unneeded roads for trail access would be preferable. 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. This alternative responds to public desires for more accessibility to national forest system lands.

The following are highlights of Alternative D:

ACCESS

- Some road construction to support tourism opportunities and commodity production
- Road construction about 4 miles/year
- Road decommissioning 8 miles/yr

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian areas same as Jefferson NF (100' on perennial, 50' on intermittent streams) in watersheds with threatened and endangered aquatic species. Current plan standards in rest of watersheds
- Drinking water watersheds identified per State designation are a priority for restoration activities, along with watersheds above impaired streams and reservoirs.

RECREATION

- Three existing ATV/OHV use areas; more than one area could be planned
- Increase in trails for tourism, such as long distance, connected trails for user events
- Featured OHV routes identified and managed for OHV use
- No new developed recreation sites but offer more amenities at existing sites
- Semi-primitive areas outside wilderness, recommended wilderness or backcountry areas not maintained through plan direction

WILDERNESS/ROADLESS

- Low level of recommended wilderness (14,000 acres), determined by additions, areas with unique visitor draws, and Rockbridge County Board of Supervisors recommended areas
- Portions of the Inventoried Roadless Areas are allocated to active management, rest allocated to remote backcountry, special biological areas. Most of the additional Potential Wilderness Areas in current active management would remain in active management
- Remote backcountry managed to limit timber harvest and road construction in a manner similar to Roadless Area Conservation Rule of 2001, except to allow salvage harvest.

TIMBER HARVEST

- ASQ higher than current plan to meet an annual harvest program of 3,000 - 5,000 acres/year.
- Suitable acres around 488,000 acres
- Utilize a management area with timber as primary management objective

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional based on wood product demand, balanced age class concerns, increased game populations, restoration

TERRESTRIAL DIVERSITY

- Separate management areas for wildlife: early successional, remote habitat, mosaics of habitat, small game/watchable wildlife; perhaps add one specifically for grouse
- About 114,000 acres of Special Biological Areas

OLD GROWTH

- No old growth management area. Old growth defined by Regional definitions.
- Most of the stands meeting the old growth definition are unsuitable for timber production. Areas in the most common forest types (Dry-Mesic Oak Forests and Dry and Dry-Mesic Oak-PineForests) that are on lands suitable for timber production could be considered for harvest; can cut trees in other old growth forest types to actively restore structural conditions.

FOREST HEALTH

- Aggressive treatment of non-native invasive species; use of Integrated Pest Management techniques; emphasis on minimizing spread to adjacent private lands; aggressive prevention and control in disturbed areas or high use areas

WIND

- Wind development would be suitable across much of the forest with a high potential for wind development; several inventoried roadless areas would be available for wind development

OIL AND GAS

- Approx 720,000 acres are available for leasing under standard or controlled surface occupancy stipulations
- Horizontal drilling (Marcellus shale development) allowed on all available acres but specific standards related to hydrofracking would be used

ECONOMICS AND LOCAL COMMUNITY

- Increase in commodity outputs related to wood, minerals, alternative energy and on tourism, including motorized recreation

FIRE

- Prescribed fire on unsuitable acres and timber management on suitable acres to achieve ecological objectives
- Utilize fire to attain ecological objectives for biodiversity when appropriate, but minimize burning of lands suitable for timber production

CLIMATE CHANGE

- Increase opportunities for climate change mitigation (alternative energy sources such as wind, oil and gas leasing and Marcellus Shale development);
- Source drinking watersheds and impaired waters are priority for restoration;
- Actively restore (chestnut, yellow pine, hemlock, spruce, riverfront hardwoods, beaver meadows, fire dependent and adapted communities, open woodlands, TESLR species);
- Timber harvest, fire and grassland/shrubland maintenance are used to manage vegetation structure and composition to improve resiliency of the ecosystems.

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 the ecological systems. In some areas of the forest large blocks of mature forest would predominate. Alt E emphasizes improving soil and water concerns in high priority watersheds. As a result of restoration treatments, commodities such as sawlogs, biomass, and fuelwood are 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 are limited; the emphasis is on maintaining existing developments.

The following are highlights of Alternative E:

ACCESS

- No net increase in open road miles.
- Road construction is 1 mile/year
- Road decommissioning 16 miles/year

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian Areas same as Jefferson (100' on perennial, 50' on intermittent streams) in all watersheds
- Priority watersheds identified based on water use (sensitive aquatic species, drinking water), impairment (particularly acid deposition), and sensitivity are a priority for restoration activities.

RECREATION

- Three existing ATV/OHV use areas; drop planned Archer Run area
- No net increase in trail miles or maintenance, focus on relocating or decommissioning of unsustainable trails
- No management of roads for OHV use
- No new developed recreation sites, closure of some sites located in floodplains
- Maintain inventoried semi-primitive acres

WILDERNESS/ROADLESS

- Recommended wilderness areas (24,000 acres) include Little River and additions to Rich Hole, Rough Mountain, Ramsey's Draft, St. Mary's, and Three Ridges
- Portions of the Inventoried Roadless Areas are allocated to active management, rest allocated to remote backcountry, special biological areas. Most of the additional Potential Wilderness Areas in current active management would remain in active management
- Remote backcountry managed to limit timber harvest and road construction in manner similar to Roadless Area Conservation Rule of 2001.

TIMBER HARVEST

- ASQ higher than current plan but not as high as Alternative D, to meet ecological restoration objectives; suitable acres around 383,000 acres.
- Annual harvest program of 1,800-3,000 acres.
- Primary purpose of timber harvest is to support other resource objectives

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional based on ecological objectives, restoration

TERRESTRIAL DIVERSITY

- One broad management area for wildlife habitat emphasis
- About 114,000 acres of Special Biological Areas

OLD GROWTH

- No old growth management area. Old growth defined by Regional definitions.
- Stands meeting the definition of old growth forests are not suitable for timber production, but trees in these stands can be cut to actively restore structural conditions
- The Peters Mountain and Frozen Head areas (boundaries modified from the Virginia DCR proposal) are unsuitable for timber production

FOREST HEALTH

- Aggressive treatment of non-native invasive species; use of Integrated Pest Management techniques; emphasis on minimizing spread to adjacent private lands; aggressive prevention and control in disturbed areas or high use areas

WIND

- No wind development allowed.

OIL AND GAS

- Low amount (660,000 acres) compared to current plan are available for leasing under standard or controlled surface occupancy stipulations
- No areas available for horizontal drilling (Marcellus Shale development).

ECONOMICS AND LOCAL COMMUNITY

- Focus is on outputs of ecosystem services, but this results in some increase in timber commodity outputs

FIRE

- Prescribed fire program around 20,000 acres/year based on ecological objectives.
- Favor use of wildfire to achieve ecological objectives instead of aggressive suppression

CLIMATE CHANGE

- Increase activities to adapt to climate change (improve ecosystem resiliency, restore vegetation composition and structure, aggressive treatment of invasive species);
- source drinking watersheds and impaired waters are priority for restoration;
- relocation or closure of some recreation sites in floodplains;
- a factor to consider in amount of recommended wilderness areas is the desire for future flexibility;
- actively restore (chestnut, yellow pine, hemlock, spruce, riverfront hardwoods, beaver meadows, fire dependent and adapted communities, open woodlands, TESLR spp);
- Timber harvest, fire and grassland/shrubland maintenance are used to manage vegetation structure and composition to improve resiliency of the ecosystems.

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. 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.

The following are highlights of Alternative F:

ACCESS

- No net increase in open road miles.
- Road construction 0.5 miles/year
- Road decommissioning 18 miles/year

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian Areas same as Jefferson (100' on perennial, 50' on intermittent streams) in all watersheds
- Drinking water watersheds identified per State designation are a priority for restoration activities, along with watersheds above impaired streams and reservoirs.

RECREATION

- Three existing ATV/OHV use areas; trails would be expanded in these areas; drop planned Archer Run area
- Increase in trails for all users but no net increase in maintenance (by relocating or decommissioning unsustainable trails)
- Specific roads not featured for OHV routes but miles would stay at current level
- No new developed recreation sites; few expansions of existing sites
- Maintain inventoried semi-primitive acres

WILDERNESS/ROADLESS

- High amount of recommended wilderness areas (112,000 acres) include Beech Lick, Three High Heads, Laurel Fork, Little Alleghany, Little River, Oliver Mountain, Potts Mountain, Three Sisters, Whites Peak and additions to Rich Hole, Rough Mountain, Ramsey's Draft, St. Mary's, and Three Ridges.
- Incorporate Shenandoah Mountain Proposal including National Scenic Areas and wilderness area recommendations
- All of the Inventoried Roadless Areas would be either recommended wilderness or remote backcountry, special biological areas. Some of the additional Potential Wilderness Areas in current active management would remain in active management
- Remote backcountry managed to limit timber harvest and road construction in manner similar to Roadless Area Conservation Rule of 2001.

TIMBER HARVEST

- ASQ around 33 mmbf/year.
- Annual harvest program of 1,000-1,800 acres.
- Suitable acres around 294,000 acres.
- Primary purpose of timber harvest is to support other resource objectives

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional based on wildlife needs, ecological objectives, restoration

TERRESTRIAL DIVERSITY

- One broad management area for wildlife habitat emphasis
- About 114,000 acres of Special Biological Areas

OLD GROWTH

- Old growth would be allocated to management prescription for old growth. Old growth defined by Regional definitions.
- No harvest of any stands meeting the definition of old growth forest
- The Peters Mountain and Frozen Head areas (boundaries as identified by the Virginia DCR proposal) are unsuitable for timber production

FOREST HEALTH

- Aggressive treatment of non-native invasive species; use of Integrated Pest Management techniques; emphasis on minimizing spread to adjacent private lands; aggressive prevention and control in disturbed areas or high use areas

WIND

- Areas not suitable for wind development: Wilderness, recommended wilderness, National Scenic Area, Special Biological Areas, Indiana bat protection areas, Appalachian Trail corridor, remote backcountry areas

OIL AND GAS

- Low amount (630,000 acres) compared to current plan are available for leasing under standard or controlled surface occupancy stipulations
- Horizontal drilling (Marcellus shale development) allowed on all available acres (except within public water supplies) but specific standards related to hydrofracking would be used

ECONOMICS AND LOCAL COMMUNITY

- Similar to Alternative A

FIRE

- Prescribed fire program between 12,000 and 20,000 acres/year
- Utilize fire to attain ecological objectives for biodiversity when appropriate

CLIMATE CHANGE

- Source drinking watersheds and impaired waters are priority for restoration;
- actively restore (chestnut, yellow pine, hemlock, spruce, riverfront hardwoods, beaver meadows, fire dependent and adapted communities, open woodlands, TESLR spp);
- Timber harvest, fire and grassland/shrubland maintenance are used to manage vegetation structure and composition to improve resiliency of the ecosystems.

ALTERNATIVE G – Preferred Alternative

Alternative G was developed after reviewing public comments and agency concerns received and developed throughout the entire process, including the last public meeting in October 2010. Each significant issue was reviewed in relation to how it was addressed by the various alternatives, the environmental effects of the alternative in relation to the issue and the benefits or outputs related to the issue. This alternative contains aspects of each of the other alternatives.

This alternative 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. It 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 requirement, 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, biomass, and fuelwood are 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. Many of the closed roads would be used to supplement the trail system for non-motorized uses. Management of all Inventoried Roadless Areas would closely mirror the management restrictions on road construction and timber harvest that were described in the 2001 Roadless Area Conservation Rule.

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. Large blocks of unroaded areas would provide remote, backcountry experiences not available on private lands. High scenic quality would be a major emphasis.

The following are highlights of Alternative G:

ACCESS

- No net increase in open road miles.
- Road construction 1.5 miles/year
- Decommissioning 16 miles/year

WATER, SOILS, RIPARIAN, AQUATIC DIVERSITY

- Riparian Areas same as Jefferson (100' on perennial, 50' on intermittent streams) in all watersheds
- Priority watersheds identified based on sensitive aquatic species, drinking water use identified by state agencies, impairment identified by state agencies that can be addressed by management activities on the Forest are a priority for restoration activities.

RECREATION

- Three existing ATV/OHV use areas; drop planned Archer Run area
- No net increase in trail maintenance, focus on relocating or decommissioning of unsustainable trails
- High clearance roads remain available for OHV use at current levels
- No new developed recreation sites, few expansions at existing sites
- Maintain most of the inventoried semi-primitive acres through land allocations

WILDERNESS/ROADLESS

- Recommend St Mary's Addition (West), Little River, Rich Hole addition and Ramsey's Draft addition (total 20,000 ac) for wilderness

- All Inventoried Roadless Areas not recommended for wilderness designation or special biological areas are allocated to remote backcountry and managed to limit timber harvest and road construction in manner similar to Roadless Area Conservation Rule of 2001.
- Areas in Potential Wilderness Areas (and not in Inventoried Roadless Areas) are allocated to a variety of management prescription areas including remote backcountry and mosaics of wildlife habitat.

TIMBER HARVEST

- ASQ similar to current plan to meet ecological restoration objectives; suitable acres around 400,000 acres.
- Annual harvest program of 1,800-3,000 acres.
- Primary purpose of timber harvest is to support other resource objectives with a secondary purpose of providing wood products

TIMBER HARVEST, TERRESTRIAL DIVERSITY, FIRE

- Amount and location of early successional based on ecological objectives, restoration needs

TERRESTRIAL DIVERSITY

- One broad management area for wildlife habitat emphasis
- About 114,000 acres of Special Biological Areas

OLD GROWTH

- No old growth management area. Old growth defined by Regional definitions.
- Most of the stands 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) that are on lands suitable for timber production could be considered for harvest.
- The Peters Mountain and Frozen Head areas (boundaries modified from the Virginia DCR proposal) are unsuitable for timber production

FOREST HEALTH

- Aggressive treatment of non-native invasive species; use of Integrated Pest Management techniques; emphasis on minimizing spread to adjacent private lands; aggressive prevention and control in disturbed areas or high use areas

WIND

- Areas not suitable for wind development: Wilderness, recommended wilderness, National Scenic Area, Special Biological Areas, Research Natural Areas, cultural/heritage areas, Shenandoah Mountain Crest-Cow Knob salamander area, special geologic areas, Indiana bat protection areas, Appalachian Trail corridor, Blue Ridge Parkway corridor, and remote backcountry areas

OIL AND GAS

- Low amount (660,000 acres) compared to current plan are available for leasing under standard or controlled surface occupancy stipulations
- No areas available for horizontal drilling (Marcellus Shale development).

ECONOMICS AND LOCAL COMMUNITY

- Focus is on outputs of ecosystem services, but this results in some increase in timber commodity outputs

FIRE

- Prescribed fire program between 12,000 and 20,000 acres/year
- Utilize wildfire to attain ecological objectives for biodiversity when appropriate

CLIMATE CHANGE

- Increase activities to adapt to climate change (improve ecosystem resiliency, restore vegetation composition and structure, aggressive treatment of invasives);
- source drinking watersheds and impaired waters are a priority for restoration;
- a factor to consider in amount of recommended wilderness areas is the desire for future flexibility;
- actively restore (chestnut, yellow pine, hemlock, spruce, riverfront hardwoods, beaver meadows, fire dependent and adapted communities, open woodlands, TESLR spp);
- Timber harvest, fire and grassland/shrubland maintenance are used to manage vegetation structure and composition to improve resiliency of the ecosystems.

COMPARISON OF ALTERNATIVES

Table 2-2 displays the allocation of management prescriptions by Alternative. The remainder of this section compares how each Alternative addresses the significant issues. This comparison provides a brief summary of Chapter 3 (Environmental Effects of Alternatives) of this Environmental Impact Statement.

Table 2-2. Land Allocation of Management Prescriptions by Alternative

Rx	RX DESCRIPTION	ALT A		ALT B		ALT C		ALT D	
		Acres	%	Acres	%	Acres	%	Acres	%
1A	Designated Wilderness	42,954	4%	43,049	4%	42,992	4%	42,992	4%
1B	Recommended Wilderness Study	1,413	0%	20,422	2%	386,786	36%	14,627	1%
2C2	Eligible Wild and Scenic River-Scenic	4,147	0%	3,101	0%	3,749	0%	3,881	0%
2C3	Eligible Wild and Scenic River-Recreation	4,117	0%	2,730	0%	4,663	0%	4,219	0%
4A	Appalachian Trail	8,945	1%	8,505	1%	6,783	1%	8,513	1%
4B1	Research Natural Area	1,979	0%	1,980	0%	1,979	0%	1,979	0%
4C1	Geologic Area	176	0%	178	0%	176	0%	176	0%
4D	Special Biological Area	24,454	2%	51,427	5%	21,303	2%	51,574	5%
4D1	Key Natural Heritage Community Area								
4F	Mt Pleasant National Scenic Area	7,753	1%	7,742	1%	7,744	1%	7,744	1%
4FA	Recommended National Scenic Area							8,241	1%
5B	Communication Site					13	0%	13	0%
5C	Utility Corridor	6,731	1%	6,750	1%	6,754	1%	6,754	1%
7A1	Scenic Byway	4,720	0%	4,954		4,956	0%	4,956	0%
7B	Scenic Corridors and Viewsheds	43,925	4%	38,286	4%	1,042	0%	35,403	3%
7C	ATV Use Area	11,399	1%	9,889	1%	9,933	1%	9,933	1%
7D	Concentrated Recreation Areas					664	0%	664	0%
7E	Dispersed Recreation Areas								
7E1	Dispersed Recreation Areas-Unsuitable	41,408	4%	30,550	3%	21,889	2%	21,348	2%
7E2	Dispersed Recreation Areas-Suitable	5,499	1%	4,181	0%			5,236	0%
7F	Blue Ridge Parkway			4,414	0%	4,147	0%	4,418	0%
7G	Pastoral Landscapes	6,012	1%	4,331	0%			4,112	0%
8A1	Mix of Successional Habitats	258,339	24%					316,872	30%
8A1U	Mix of Successional Habitats-Unsuitable	69,736	7%						
8B	Early Successional Habitats	38,885	4%					34,031	3%
8BU	Early Successional Habitats-Unsuitable	766	0%						
8C	Black Bear/Remote Habitats	74,421	7%					124,835	12%
8CU	Black Bear/Remote Habitats-Unsuitable	61,204	6%						
8E4a	Indiana Bat-Primary	1,672	0%	1,672	0%	1,671	0%	1,671	0%
8E4b	Indiana Bat-Secondary	11,056	1%	13,709	1%	13,713	1%	13,713	1%
8E7	Shen Mtn Crest-Cow Knob Salamander	43,137	4%	46,692	4%	20,343	2%	53,855	5%
9A1	Source Water Watershed Protection					142,612	13%		
10B	Timber Production	86,698	8%					91,257	9%
10BU	Timber Production-Unsuitable	4,685	0%						
12D	Remote Backcountry	198,858	19%	191,935	18%	113,852	11%	190,423	18%
13	Mosaics of Habitat-Suitable			569,421	53%				
13U	Mosaics of Habitat-Unsuitable					245,678	23%		
Water	Lake Moomaw	2,479	0%	2,479	0%	2,479	0%	2,479	0%
Total		1,065,918		1,065,918		1,065,918		1,065,918	

Table 2-2. Land Allocation of Management Prescriptions by Alternative (Cont'd)

Rx	RX DESCRIPTION	ALT E		ALT F		ALT G	
		Acres	% of Forest	Acres	% of Forest	Acres	% of Forest
1A	Designated Wilderness	42,992	4%	42,992	4%	42,992	4%
1B	Recommended Wilderness Study	24,325	2%	112,144	11%	20,314	2%
2C2	Eligible Wild and Scenic River-Scenic	3,834	0%	2,176	0%	3,848	0%
2C3	Eligible Wild and Scenic River-Recreation	4,088	0%	4,341	0%	4,179	0%
4A	Appalachian Trail	8,513	1%	8,513	1%	8,519	1%
4B1	Research Natural Area	1,979	0%	1,978	0%	1,979	0%
4C1	Geologic Area	3,879	0%	176	0%	3,881	0%
4D	Special Biological Area	51,574	5%	30,438	3%	51,565	5%
4D1	Key Natural Heritage Community Area					3,308	0%
4F	Mt Pleasant National Scenic Area	7,744	1%	7,744	1%	7,744	1%
4FA	Recommended National Scenic Area			127,940	12%		
5B	Communication Site	13	0%	13	0%	13	0%
5C	Utility Corridor	6,754	1%	6,754	1%	6,714	1%
7A1	Scenic Byway	4,956	0%	4,956	0%	4,956	0%
7B	Scenic Corridors and Viewsheds	34,045	3%	32,358	3%	34,876	3%
7C	ATV Use Area	9,933	1%	9,933	1%	9,933	1%
7D	Concentrated Recreation Areas	664	0%	615	0%	662	0%
7E	Dispersed Recreation Areas					27,915	2%
7E1	Dispersed Recreation Areas-Unsuitable	21,263	2%	14,524	1%		
7E2	Dispersed Recreation Areas-Suitable	4,086	0%	1,125	0%		
7F	Blue Ridge Parkway	4,418	0%	4,390	0%	4,418	0%
7G	Pastoral Landscapes	4,112	0%	4,107	0%	4,280	0%
8A1	Mix of Successional Habitats						
8A1U	Mix of Successional Habitats-Unsuitable						
8B	Early Successional Habitats						
8BU	Early Successional Habitats-Unsuitable						
8C	Black Bear/Remote Habitats						
8CU	Black Bear/Remote Habitats-Unsuitable						
8E4a	Indiana Bat-Primary	1,671	0%	1,671	0%	1,671	0%
8E4b	Indiana Bat-Secondary	13,698	1%	13,713	1%	13,698	1%
8E7	Shen Mtn Crest-Cow Knob Salamander	49,644	5%	23,382	2%	46,812	4%
9A1	Source Water Watershed Protection						
10B	Timber Production						
10BU	Timber Production-Unsuitable						
12D	Remote Backcountry	264,184	25%	147,622	14%	252,159	24%
13	Mosaics of Habitat-Suitable	491,763	46%	350,453	33%	507,006	48%
13U	Mosaics of Habitat-Unsuitable	3,308	0%	109,380	10%		
Water	Lake Moomaw	2,479	0%	2,479	0%	2,479	0%
Total		1,065,918		1,065,918		1,065,918	

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.

Although the road system of the GWNF is largely complete, there are still occasional needs for new roads to access trailheads, manage vegetation, or facilitate mineral development. Table 2-3 displays the estimated road construction miles, road decommissioning miles and the Minimum Roads System by the different alternatives.

Table 2-3. Comparison of the Access Issue by Alternative, miles

	Alternative						
Transportation System	**A**	**B**	**C**	**D**	**E**	**F**	**G**
Current System Roads	1,823	1,823	1,823	1,823	1,823	1,823	1,823
Special Use Roads-not part of the Minimum Roads System	50	50	50	50	50	50	50
Potential Forest Highways-not part of the Minimum Roads System	107	107	107	107	107	107	107
Road Construction (miles during 1st decade)	29	15	0	41	9	5	15
Road Decommissioning (miles during 1st decade)		160	160	80	160	160	160
Potential Additional Decommissioning from Future Wilderness Designation	0	0	124	3	1	17	1
Minimum Roads System after 1st decade	1,695	1,521	1,382	1,624	1,514	1,494	1,520

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

ISSUE STATEMENTS: 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.

Table 2-4 highlights several factors associated with this issue. In project implementation, the application of standards for the riparian management prescription and channeled ephemeral stream standards should fully protect drinking water quality. No measureable direct or indirect effects on water quality should occur. In order to verify that these standards are adequate, some ground disturbing projects will be monitored for implementation of standards and for effectiveness of standards. All of the alternatives protect the floodplain/riparian ecological system, but Alternatives B, C, E, F, and G expand the width of the riparian corridor and so increase the area that will receive the riparian management objectives, desired conditions and objectives to protect, restore and maintain riparian resources.

Table 2-4. Comparison of the Watersheds, Soil and Water Quality, Riparian Resources and Aquatic Diversity Issue by Alternative

	Alternative						
	A	B	C	D	E	F	G
Soil and Water	**Acres**						
Areas of ground disturbance	254	292-384	79	635-785	189-275	260-323	315-407
Riparian Areas	**Feet**						
Riparian corridor width-perennial (ft)	66'+	100	100	66'+	100	100	100
Riparian corridor width-intermittent (ft)	33'+	50	50	33'+	50	50	50
Riparian corridor width-ephemeral (ft)		25	25		25	25	25

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.

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). By restoring and maintaining the key characteristics, conditions, and functionality of native ecological systems, the GWNF should be able to maintain and improve ecosystem diversity and also provide for the needs of diverse plant and animal species on the forest. Although there are 20 ecological systems on the Forest, for most purposes they can be combined in the following nine ecological system groups: Oak Forests and Woodlands; Pine Forests and Woodlands; Northern Hardwood Forests; Spruce Fir Forests; Cove Forests; Cliff, Talus and Shale Barrens; Mafic Glade and Barrens and Alkaline Glades and Woodlands; Caves and Karstlands; and Floodplains, Wetlands, and Riparian Areas.

Structure and tree age diversity are both characteristics that are important to all forested ecological systems. Table 2-5 compares the structural diversity provided in the alternatives.

Table 2-5. Projected Habitat Components at 10 Years by Alternative

Habitat Component	Current Condition	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
Early Successional Forest	3%	4%	2-3%	2%	3-5%	2-3%	2-3%	2-3%
Open Woodlands	2%	5%	11%	2%	8%	11%	11%	11%
Grassland/Shrublands	0.05%	0.05%	0.06%	0.02%	0.05%	0.06%	0.06%	0.06%
Mid- to late successional Hard Mast Producing Forest	90%	89%	89%	92%	88%	90%	91%	89%
Total acres of combined active management habitat components	5%	8%	14 - 15%	3%	13-14%	13-14%	13 - 14%	13-14%

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.

There are a variety of viewpoints about old growth forests on public lands. Some viewpoints state the spatial distribution and linkages of patches with varying sizes are important, that old growth communities are underrepresented on private lands, and that the national forests have the best opportunity to provide for these communities. There is also a debate about how old growth should be managed, maintained, or restored. Many people state that old growth areas should be protected or "preserved" and that there should be no harvesting within these areas.

There are many values that people associate with old growth, some of which are compatible, and others that present conflict. 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. Some may never visit an old growth site but will receive satisfaction from "just knowing" that it exists. On the other hand, old growth areas are a source of large-diameter, high-value hardwoods, which are limited in supply and in high demand for such products as furniture and finish construction work. Others say that insect and disease risk can be relatively high in old growth stands and could (for some community types) threaten the retention of those stands as old growth. There is concern that fire exclusion could favor a buildup of fire-intolerant, but shade-tolerant, species that could eventually replace the original old growth type. Another view is that active management, including timber harvest and prescribed fire, could be used to accelerate the development of old growth attributes.

In Alternatives C, E, and F all Old Growth Forest Types are unsuitable for timber production. In Alternatives A and B possible and existing OGFT 21 (Dry Mesic Oak) stands on suitable ground remain suitable. In Alternatives D and G possible and existing old growth in both OGFT 21 and 25 (Dry and Dry Mesic Oak-Pine) stands on suitable ground remain suitable. Each alternative includes management prescriptions that either have the intent of protecting possible old growth and expanding it, or of providing old growth indirectly as the result of management focused on other values, such as primitive recreation. Table 2-6 compares land allocations that have potential for old growth being found in larger blocks by alternative. Alternative C contains the greatest acreage within potential future old growth since over one-third of the total Forest acreage is in Recommended Wilderness. This is followed by Alternatives F, A, E, and G respectively. Alternatives B and D provides the least amount of potential old growth.

Table 2-6. Acreage in key Management Prescriptions that will provide for most large blocks (>= 2,500 acres) of old growth, by Alternative

Management Prescription		Alternative						
		A	B	C	D	E	F	G
1A	Designated Wilderness	42,954	43,049	42,992	42,992	42,992	42,992	42,992
1B	Recommended Wilderness Study	1,413	20,422	386,786	14,627	24,325	112,144	20,314
4B1	Research Natural Area	2,808	1,980	1,979	1,979	1,979	1,979	1,979
4D	Special Biological Area	24,454	51,427	21,303	51,574	51,574	30,438	51,565
4D1	Key Natural Heritage Community Area	0	0	0	0	3,308	0	3,308

Management Prescription		Alternative						
		A	B	C	D	E	F	G
4F	Mt Pleasant National Scenic Area	7,753	7,742	7,744	7,744	7,744	7,744	7,744
4FA	Recommended National Scenic Area	0	0	0	8,241	0	127,940	0
8A1U	Mix of Successional Habitats – Unsuitable	69,736	0	0	0	0	0	0
8CU	Black Bear / Remote Habitats - Unsuitable	61,204	0	0	0	0	0	0
8E7	Shenandoah Mtn Crest – Cow Knob Salamander	43,137	46,692	20,343	53,855	49,644	23,382	46,812
12D	Remote Backcountry	198,858	191,935	113,852	190,423	264,184	147,622	252,159
13U	Mosaics of Habitat - Unsuitable	0	0	245,678	0	0	109,380	0
Total Acres		452,317	363,247	840,677	371,435	445,750	603,621	426,873

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.

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. 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 spread across landscapes, unimpeded by ownership boundaries. Even without active management NNIP infestations will occur across the Forest. Insect and disease outbreaks, wildfires, storm events (including wind thrown trees, flooding, landslides, and ice damage) encourage NNIP establishment. Alternative A follows the current Plan which is not as aggressive in controlling NNIP as Alternatives D, E, F and G. Alternative B only includes integrated pest management and is less aggressive at controlling NNIP than D, E, F and G. Alternative C would result in the least amount of ground disturbance which could reduce the potential for NNIP infestations; however, the decrease in accessibility in Alternative C could result in less aggressive treatment of NNIP infestations. Alternatives D, E, F and G all have similar language regarding pre-treatment of areas that will be disturbed. Therefore, the potential for NNIP infestations from ground disturbing activities could be offset by aggressive NNIP treatments.

The GWNF has experienced gypsy moth defoliation since 1987, through 3 to 4 outbreak cycles with a total of about 1.5 million acres defoliated. Many areas have been defoliated several times, resulting in severe mortality. Although the front of the gypsy moth infestation has passed the forest, the gypsy moth will likely be a part of the Forest's ecosystem for many years to come. Approximately 867,000 acres of the GWNF is comprised of forest types susceptible to gypsy moth infestation (types where oak either dominates or is a significant portion of the stand). This represents approximately 72% of the forest in a moderate or severely susceptible host type. While suppression of gypsy moth populations would be permissible under all Alternatives, the economic cost and concern for environmental impacts of widespread use of current treatment

tactics, primarily the aerial application of insecticides, would result in only a very small amount of the Forest receiving such management actions. Timber harvest and prescribed fire can help reduce gypsy moth risk in upland oak and mixed oak-pine stands. Table 2-7 shows how the alternatives vary in their effect on gypsy moth risk at the end of 50 years of management. Alternative D would have the highest potential to reduce gypsy moth impacts with approximately 45% of the GWNF in a high or extreme gypsy moth risk. Similar conclusions can be made about the effects on oak decline since oak species are the most susceptible to gypsy moth.

Table 2-7. Gypsy Moth Risk at the end of 50 years of Plan implementation

Activity in Susceptible Types	Alternative						
	A	B	C	D	E	F	G
Acres Regenerated (1st decade)	17,000	11,000	0	23,000	11,000	8,000	11,000
Acres Thinned (1st decade)	6,000	4,000	0	8,000	4,000	2,000	4,000
Total Acres Harvested (1st decade)	23,000	15,000	0	31,000	15,000	10,000	15,000
% Acres at High Risk (1st decade)	37%	38%	38%	37%	38%	38%	38%
% Acres at High Risk (5th decade)	34%	37%	39%	32%	36%	38%	36%
% Acres at Extreme Risk (1st decade)	19%	20%	20%	19%	20%	20%	20%
% Acres at Extreme Risk (5th decade)	15%	19%	21%	13%	17%	19%	17%

Unfortunately, most of the hemlocks on the Forest have succumbed to the hemlock woolly adelgid. In some areas, white pine may be able to fill this ecological niche, but it will take time for white pine to fully occupy the sites formerly held by hemlock. Loss of cover is likely to also adversely affect a myriad of bird and wildlife species on the GWNF. Therefore, the difference in the effects on riparian habitat from other management activities between the alternatives is the best way to look at the effects from the hemlock woolly adelgid.

Southern pine beetle (SPB) (*Dendroctonus frontalis*) is a native pest whose infestations have occurred cyclically throughout recorded history in the South. Managers can control both the proportion of susceptible species and the radial growth of trees through vegetation manipulation activities. Thinning and/or regeneration harvests can alter both species composition and radial growth of the trees within a stand. However, thinning in these stands that often occur on relatively poor sites is rarely economically, or even logistically, viable. Many of these stands occur on lands unsuitable for timber production. The use of prescribed fire can reduce stand density, similar to a thinning, and ultimately increase radial growth on the residual stems. Fire can also regenerate some forest types, especially table mountain and to a lesser extent pitch pine. Thus, while timber harvest can help to lower SPB risk, the use of prescribed fire can treat the most acres and represents our best tool in lowering SPB risk. Table 2-8 shows how the risk to Southern Pine Beetle varies among the alternatives.

Table 2-8. Acres in Southern Appalachian Montane Pine Forest and Woodland and Central Appalachian Pine-Oak Rocky Woodland Ecological Systems burned, regenerated, and thinned and at risk from oak decline effects at the end of the next decade by alternative.

Activity in Susceptible Types	Alternative (acres)						
	A	B	C	D	E	F	G
Acres Managed by Fire	3,000	16,000	10,000	12,000	70,000	16,000	70,000
Acres Regenerated by Harvest	2,000	700	0	3,000	1,500	1,000	1,500
Acres Thinned by Harvest	0	0	0	0	200	102,000	200
Total Acres Vulnerable/High Risk	114,000	102,000	109,000	104,000	48,000	102,000	48,000

Wind Energy

ISSUES 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).

Alternative A, the current Forest Plan does not address this issue. No areas are considered to be unsuitable for wind energy development, though management area guidance would limit road construction and clearing activities in some areas. Alternatives B, F, and G would allow consideration of wind energy development proposals on some areas of the Forest but the following areas are unsuitable for wind energy development: Wilderness, Recommended Wilderness, Special Biological Areas, Research Natural Areas, Special Geologic Areas, Shenandoah Mountain Crest – Cow Knob Salamander Area, Indiana Bat Protection Areas, Appalachian Trail Corridor, Blue Ridge Parkway Scenic Corridor, Remote Backcountry Areas and Mount Pleasant National Scenic Area. Alternative D is similar to Alternatives B, F, and G except that wind energy development proposals would be considered in several remote backcountry areas because of the high potential for wind energy development. Alternatives C and E prohibit the development of wind energy across the Forest.

Table 2-9 highlights the differences in the estimated potential for wind development, including an infrastructure, among the alternatives.

Table 2-9. Comparison of Potential Wind Energy Development by Alternative

Area in Wind Power Classes 3 through 7, Suitable for Consideration of Wind Energy Development (acres)						
Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
116,871	46,625	0	54,533	0	40,841	39,236

Alternatives A, C, and E would have no wind energy development. They would not address the need for alternative energy sources.

Effects of the development on soils, scenery, aquatic resources, geologic resources and water are addressed in those sections of the EIS. Potential effects on wildlife include the long term occupation of the ridgelines with openings, roads and turbines. Ridgelines are used by many birds and bats during migrations and during resident activities.

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.

In response to Marcellus Shale concerns, additional stipulations were developed and applied differently to the alternatives. The Horizontal Drilling Moratorium Stipulation and the Horizontal Drilling Operations Control Stipulation are described below.

- The Horizontal Drilling Moratorium Stipulation states that the surface management agency (USDA-Forest Service) has a moratorium on processing Surface Use Plan of Operations of an Application for Permit to Drill for any horizontal well and associated hydraulic fracturing. The moratorium will end on May 1, 2013.

- The Horizontal Drilling Operations Control Stipulation states that applicants for Surface Use Plan of Operations of APD for any horizontal well and associated hydraulic fracturing will supply a list of the quantity and chemical composition of all materials proposed for use in drilling and hydraulic fracturing, as well as several other design assessment criteria. Surface disposal of hydraulic fracturing materials on NFS lands will not be authorized. Based on an environmental analysis, the USDA-Forest Service will determine whether subsurface disposal of hydraulic fracturing materials in an EPA-approved underground injection well on NFS lands will be authorized or prohibited.

Alternative C does not allow any federally oil and gas leasing, except what is currently under lease. All other alternatives allow for vertical drilling leases. The first four rows of Table 2-10 display the number of acres that could be federally leased under four different surface occupancy leasing options (standard terms, controlled, timing, and no surface) for each alternative. The determination of the type of surface occupancy leasing option depends on the management prescription. For example, leasing is allowed in a Scenic Corridor and Viewshed area but only with a no surface occupancy stipulation. The next two rows address horizontal drilling and hydrofracturing concerns, by applying additional stipulations. Alternatives E and G do not allow any horizontal drilling and hydrofracturing. Alternative F allows horizontal drilling, except for in public water supply areas. Alternative A allows horizontal drilling with no additional stipulations. Alternatives B and D allow horizontal drilling, with the Moratorium Stipulation and the Operations Control Stipulation.

Table 2-10 Federal Oil and Gas Leasing Availability by Alternative (thousands of acres)

	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
Standard Lease Terms*	145	625.1	0	614.4	541.2	496.3	555.9
Controlled Surface Use Stipulation*	825	151.8	0	161.6	159.6	105.3	161.0
Timing Stipulation*	0	13.7	0	13.7	13.7	13.7	13.7
No Surface Occupancy Stipulation*	41	202.4	0	200.9	274.7	158.1	262.7
Horizontal Drilling Moratorium Stipulation Horizontal Drilling Operations Control Stipulation	0	993.0	0	990.6	0	742.0	0
No Horizontal Drilling Stipulation	0	0	0	0.0	989.2	31.5	993.2
Administratively Unavailable	3.1	22.1	1,015.2	24.5	26.0	241.8	22.0
Legally Unavailable	50.7	50.8	50.7	50.7	50.7	50.7	50.7

* In Alternatives B, D, E, F and G the lease is restricted by Stipulations on horizontal drilling.

Note: The Horizontal Drilling Stipulations acres apply to same acres with Stipulations (CSU, Timing, NSO) and Standard Lease terms for vertical wells.

Note: The No Horizontal Drilling Stipulation acres in Alt F are in public water supply watersheds.

To determine the effects of federal oil and gas leasing activity in the future, the Bureau of Land Management (BLM) projected post-leasing activity with a Reasonable Foreseeable Development Scenario (RFD) that estimated that a maximum of 319 natural gas wells, with associated surface disturbance, including well pads, roads, and pipelines, could occur over a 15 year planning horizon on the Forest. This projection of future oil and gas activity was based on the assumption that all the Forest except areas withdrawn from leasing by law would be available for oil and gas leasing under standard lease terms and conditions. Because each alternative will have more restrictive constraints on availability of federal oil and gas leasing by applying different stipulations, each alternative will project less oil and gas activity than the GWNF baseline RFD (as shown in Table 2-11.

Table 2-11 Federal Oil & Gas Lease Activity by Alternative

		Number of wells	Roads (miles)	Pipelines (miles)	Water use for drilling (1,000s of gallons)	Water use for hydraulic fracturing (1,000s of gallons)
Alt A	Develop wells (vertical)	39	39	43	787	15,731
	Develop wells (horizontal)	198	132	145	19,767	988,350
Alt B	Develop wells (vertical)	30	30	33	609	12,177
	Develop wells (horizontal)	153	102	112	15,267	763,350
Alt C	Develop wells (vertical)	0	0	0	0	0
	Develop wells (horizontal)	0	0	0	0	0
Alt D	Develop wells (vertical)	30	30	33	608	12,158
	Develop wells (horizontal)	153	102	112	15,267	763,350
Alt E	Develop wells (vertical)	27	27	29	534	10,676
	Develop wells (horizontal)	0	0	0	0	0
Alt F	Develop wells (vertical)	22	22	24	436	8,722
	Develop wells (horizontal)	114	76	83	11,367	568,350
Alt G	Develop wells (vertical)	27	27	30	550	10,992
	Develop wells (horizontal)	0	0	0	0	0

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.

Table 2-12 displays the acres of prescribed fire by alternative in an average year over the next decade.

Table 2-12 Prescribed Burning by Alternative

	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
Acres Prescribed Burned annually	3,000	12,000-20,000	Limited	5,000-12,000	20,000	12,000-20,000	12,000-20,000

Alternative E would be the largest prescribed burn program since it is the restoration alternative and biologically driven. Alternative C would generate the smallest prescribed burn program as prescribed burning would be limited to managing threatened, endangered and sensitive species habitats. Alternative A has the acres estimated to be prescribed burned annually in the current Plan. Alternative D has an emphasis on commodity production and opportunities for prescribed burning would be limited. Alternatives B, F, and G have a program that includes an emphasis on restoration while taking into account fluctuations in weather and funding that may limit the number of acres likely to be burned annually.

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).

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. Developed recreation is not a significant issue and it does not vary significantly by alternative. 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. The demand is greatest among the equestrian and mountain biking communities. There is more demand than supply for motorized trail opportunities. Some comments stated that OHV/ATV use is not appropriate at all on the Forest due to the noise, potential environmental damage, and the need could be met commercially on private lands. Table 2-13 highlights some of the differences between alternatives for dispersed recreation opportunities.

Table 2-13. Comparison of the Recreation Issue by Alternative

Type of Recreation Activity	ALT A	ALT B	ALT C	ALT D	ALT E	ALT F	ALT G
Hiking, Pack-and-Saddle, Mountain Bicycling	Increase 0-3% <30 miles	No net change	Increase <3% <30 miles	Increase 5-10% 50-100 miles	No net change	Increase <3% <30 miles	Increase <3% <30 miles
Effect of Wilderness Designation on Mountain Bicycling*	No change	Loss of 9 miles of trail	Loss of 434 miles of trail	Loss of 1 mile of trail	Loss of 11 miles of trail	Loss of 70 miles of trail	Loss of 9 miles of trail
All-Terrain Vehicles and Motorcycles	Increase 10-25%; or 6-16 miles	No change	No change	Increase 25-60%; or 16-40 miles	No change	Increase up to 10%; or 6 miles.	Increase 5-10%; or 3-6 miles
Off-Highway Vehicles	Increase 0-25 miles; roads are featured for OHVs.	No featured OHV roads; current level of high clearance roads	No roads managed for OHVs	Increase 20-40 miles; roads are featured for OHVs	No roads managed for OHVs	No featured OHV roads; current level of high clearance roads	Current level of high clearance roads

* The allocation of land to Recommended Wilderness will not affect mountain bike use in those areas. However, if Recommended Wilderness Areas are designated as Wilderness by Congress, then all mechanical and motorized transport forms of recreation, such as mountain bicycling, will be prohibited according to the Wilderness Act of 1964.

The alternative with the most emphasis on expanding the existing overall trails program is Alternative D. It provides the greatest increases in the dispersed recreation trail systems, including hiking, mountain biking, horseback riding, ATV, OHV and interpretive trails. Alternative A increases trail construction of both motorized and non-motorized trails and identifies featured OHV roads. Alternatives B and E include no significant increase or decrease in the current motorized or non-motorized miles of trail. Specific OHV roads are not featured in Alternative B, but high clearance roads will continue to be provided for OHV use at the current level. Under Alternative E, no roads are managed for OHVs. Alternative C has the greatest potential for decreased miles of trail available to mountain bicycling users in the future. Mountain bikes will continue to be allowed in Recommended Wilderness areas, but are prohibited by law when Congress designates an area as Wilderness. Alternative C provides for increased miles of non-motorized trail, as long as there is no increase in trail maintenance costs. Alternative C makes maintenance of the trail system more challenging, as hand tools must be used rather than power tools in areas designated as Wilderness. Alternative F focuses on improving the existing miles of non-motorized trails and improves and expands the existing ATV/OHV trail systems. It promotes a sustainable trails program that allows for expansion only when the resulting level of maintenance will be equivalent to or less than the existing maintenance needs. Alternative G provides for increased motorized and non-motorized trail miles when it is beneficial for the resources (such as relocations off of steep slopes and wet areas) and the extra miles result in no net increase in maintenance. Alternative G does not identify specific featured OHV routes, but provides for the current level of high clearance roads to be maintained for OHV use.

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.

Wilderness

Table 2-14 lists the Recommended Wilderness Study Areas by alternative. With the exception of Whites Peak, all of the areas are either an Inventoried Roadless Area or Potential Wilderness Area, or both. Whites Peak is a remote area recommended for wilderness study by the local county Board of Supervisors.

Table 2-14. Recommended Wilderness Study Areas by Alternative

Area Recommended for Wilderness Study (Rx 1B) *	Alternative						
	A	B	C	D	E	F	G
Adams Peak (PWA, IRA)			8,200				
Archer Knob (PWA)			7,100				
Beards Mountain (PWA, IRA)			10,100				
Beech Lick Knob (PWA)			14,100			11,600	
Big Schloss (PWA, IRA)			28,400			7,200	
Crawford Knob (PWA, IRA)			14,900				
Dolly Ann (PWA, IRA)			9,600				
Duncan Knob (PWA)			6,000				
Elliott Knob (PWA, IRA)			11,100				
Galford Gap (PWA)			6,700				
Gum Run (PWA, IRA)			14,500				
High Knob (PWA, IRA)			5,600				
- Dry Run (IRA)			7,200				
- Skidmore (IRA)			5,600			5,600	
Jerkemtight (PWA, IRA)			27,300				
Kelley Mountain (PWA, IRA)			12,900				
Laurel Fork (PWA, IRA)			10,200			10,200	
Little Alleghany (PWA, IRA)			15,400			15,400	
Little Mare Mountain (PWA)			11,900				
Little River (PWA, IRA)		12,600	30,100		12,700	12,700	9,300
Massanutten North (PWA, IRA)			16,600				
Oak Knob-Hone Quarry Ridge (PWA, IRA)			16,300				
Oliver Mountain (PWA, IRA)			13,100			8,700	
Paddy Knob (PWA)			6,000				
Potts Mountain (PWA)			7,000			4,200	
Ramsey's Draft Add. (PWA, IRA)		3,100	19,100		3,100	12,400	6,100
Rich Hole Addition (PWA, IRA)		4,700	12,100	4,700	4,700	11,100	4,700

Area Recommended for Wilderness Study (Rx 1B) *	Alternative						
	A	B	C	D	E	F	G
Rich Patch (PWA)			900				
Rough Mountain Add. (PWA, IRA)			2,000		2,100	2,100	
St Mary's North (PWA)			3,000				
St Mary's South (PWA, IRA)	1,500		1,700		1,700	1,700	
St Mary's West (PWA)		300	300	200	200	200	300
Shaws Ridge (PWA)			7,300				
Shawvers Run Add (PWA)			100				
Three Ridges Add North (PWA)			100			100	
Three Ridges Add South (PWA)			200			200	
Three Ridges Add SW (PWA)			9			9	
Three Ridges Add West (PWA)			100			100	
Three Sisters (PWA, IRA)			9,900	5,500		5,500	
Southern Massanutten (IRA)			12,100				
The Friars (IRA)			2,000				
Whites Peak				4,200		4,200	
TOTAL ACRES	1,500	20,700	386,809	14,600	24,500	113,209	20,400

* PWA = Potential Wilderness Area; IRA = 2001 Inventoried Roadless Area

Alternative C recommends all of the Inventoried Roadless Areas and Potential Wilderness Areas for wilderness study. Alternatives B, E, and G focus on stand-alone wilderness areas and wilderness area additions that result in wilderness areas of a size and scale where natural processes can begin to be the dominant influence on the areas. Alternative F was based on recommendations from a number of wilderness advocacy groups. Many of the Potential Wilderness Area boundaries were adjusted to accommodate important bicycle trails, roads and other uses that would be excluded with wilderness designation. This alternative would result in about 14 percent of the GWNF in Wilderness.

National Scenic Area Recommendation

Since the actual management of any National Scenic Area (NSA) would be determined by the legislation, it is assumed for this analysis that the legislation would be similar to that used to designate other NSAs in Virginia. Designation as a National Scenic Area would prevent the construction of roads, the harvest of timber, the development of minerals, and construction associated with special use permits. Non-motorized recreation would continue, including bicycle use and hunting. The use of prescribed fire would be allowed. In Alternative D the 8,000 acre Adams Peak areas is recommended as a National Scenic Area. In Alternative F National Scenic Area recommendations include the Virginia portion of Shenandoah Mountain between Highway 33 and Highway 250, Kelley Mountain, and Adams Peak for a total of 130,000 acres.

Potential Wilderness Areas and Inventoried Roadless Areas

The GWNF has 23 Inventoried Roadless Areas (IRAs) with a total of 242,278 acres. As part of the revision process, the Forest has identified 37 areas as Potential Wilderness Areas (PWAs) with a total of 372,631 acres. The PWA inventory includes all of the IRAs, with the exception of Southern Massanutten and The Friars. For these remote areas that are not identified for Recommended Wilderness Study or recommended for National Scenic Area designation by Congress, some people would like to see them managed according to the

direction in the 2001 Roadless Area Conservation Rule (RACR) and others would like to see them actively managed for wildlife habitat and timber production.

Alternative A does not have guidelines that require that all IRAs retain their roadless characteristics, yet the management prescribed for the areas accomplishes nearly the same result. Ninety-five percent of the IRAs are classified as unsuitable for timber production in Alternative A and road construction is prohibited on 88 percent of the areas with some exceptions to provide for site-specific needs. In Alternative C, all of the Inventoried Roadless Areas are recommended for wilderness designation. In Alternatives F and G all of the Inventoried Roadless Areas that are not recommended for Wilderness have direction to maintain their roadless character as in the 2001 Roadless Conservation Rule. In Alternatives B, D and E, most of the Inventoried Roadless Areas that are not recommended for Congressional designation have the same direction as described for Alternatives F and G. However, in a few of the areas (nine in Alternative B, six in Alternative D and two in Alternative E) active management (including road construction and timber harvest) would be allowed where active management has occurred along existing roads over the past forty years. These areas are identified in Table 2-15. All other areas of Inventoried Roadless Areas would have management direction to maintain their roadless character. In addition, Alternatives B and D allow salvage harvest from existing roads with no new road construction in any of the Inventoried Roadless Areas.

Table 2-15. Inventoried Roadless Areas Allowing Management (Including Timber and Roads) by Alternative

Inventoried Roadless Area	Area	Portion of Area Without Requirement to Maintain Roadless Character						
		Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
Name	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Crawford Mountain	9,852	N/A	1,200		1,400			
Dolly Ann	7,866	N/A	800		600			
Dry River (WV)	7,254	N/A	500					
Elliott Knob	9,391	N/A	200					
Jerkemtight	16,849	N/A	800		800			
Little Alleghany	10,207	N/A	700		1,000	1,000		
Little River	27,180	N/A	1000					
Mill Mountain/Rich Hole Addition	10,919	N/A	1,500		1,500	1,500		
Oak Knob	10,852	N/A	800		1,200			

Most of the Potential Wilderness Areas expanded the boundaries of the Inventory Roadless Areas from the 2001 Roadless Area Conservation Rule, with a few PWAs being entirely new areas. The discussion of how management of just the IRAs was presented above; however the management of the 144,500 acres in the Potential Wilderness Area inventory that are outside of the IRA boundaries varies among the alternatives. Some of the acres are Recommended Wilderness Study Areas, some are allocated to management prescriptions that maintain the remote character of the area and some are allocated to management prescriptions that allow road construction and timber production. This last category is displayed in Table 2-16.

Table 2-16. Potential Wilderness Area Acreage Allowing Management by Alternative

Potential Wilderness Area Name	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
Adams Peak (PWA, IRA)	900				800		800
Archer Knob (PWA)	7,100	7,100		7,100		7,100	2,200
Beards Mountain (PWA, IRA)	2,600			1,800		1,800	1,800
Beech Lick Knob (PWA)	14,100	8,500		8,500			5,800
Big Schloss (PWA, IRA)	7,600	7,600		7,400	7,400		7,400
Crawford Knob (PWA, IRA)	4,400	5,000		5,000	2,500	2,500	5,000
Dolly Ann (PWA, IRA)	1,700	1,700		1,700	1,200	1,200	1,200
Duncan Knob (PWA)	6,000	6,000		5,900	2,300	1,300	2,600
Elliott Knob (PWA, IRA)	1,700	1,700		1,700	1,700		1,700
Galford Gap (PWA)	6,700	6,700		6,700	6,700		6,700
Gum Run (PWA, IRA)	1,900	1,900		1,400			
High Knob (PWA, IRA)	5,600	5,600		5,300			4,100
Jerkemtight (PWA, IRA)	10,500	10,500		10,400	4,300	4,300	3,600
Kelley Mountain (PWA, IRA)	5,200	5,200		300	300	300	2,800
Laurel Fork (PWA, IRA)	200	200					
Little Alleghany (PWA, IRA)	5,200	5,200		5,200	5,200		5,000
Little Mare Mountain (PWA)	11,900	11,900		11,700		5,400	7,400
Little River (PWA, IRA)	3,000	3,000		2,400		2,400	1,500
Massanutten North (PWA, IRA)	7,100	7,100		5,000	5,000	5,000	5,000
Oak Knob-Hone Quarry Ridge (PWA, IRA)	5,500	5,500		4,400			
Oliver Mountain (PWA, IRA)							
Paddy Knob (PWA)	6,000	6,000		5,100	5,100		5,100
Potts Mountain (PWA)	7,000	7,000		7,000			7,000
Ramsey's Draft Add. (PWA, IRA)	6,300	6,300		5,400	4,700		3,400
Rich Hole Addition (PWA, IRA)	1,200	1,200		1,200	1,200		1,000
Rich Patch (PWA)	900	900					
Rough Mountain Add. (PWA, IRA)	900	900		800			900

Potential Wilderness Area Name	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
St Mary's North (PWA)	3,000	3,000					
St Mary's South (PWA, IRA)	200	200					200
St Mary's West (PWA)	300						
Shaws Ridge (PWA)	7,300	7,300		7,200			
Shawvers Run Add (PWA)	100	100					100
Three Ridges Add North (PWA)	100	100					
Three Ridges Add South (PWA)	200	200					
Three Ridges Add SW (PWA)	9	9					
Three Ridges Add West (PWA)	100	100					
Three Sisters (PWA, IRA)	1,700	1,700		1,100	1,500		1,500
TOTAL ACRES	144,209	135,409	0	119,700	49,900	31,300	83,800

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.

Table 2-17 compares several indicators for this issue by alternative. The Allowable Sale Quantity is the maximum amount of timber that can be sold on lands suitable for timber production during the first decade of implementing any alternative. The purposes of timber production for Alternative A are to provide early successional habitat for: terrestrial species biodiversity, wood product demand, balanced age class concerns, and increased game populations. Alternatives B, E and F focus the timber program on providing early successional habitat based on terrestrial species biodiversity, ecosystem restoration and other ecological objectives.

Alternative D is the alternative that focuses the most emphasis on providing commodities, jobs and income to the local economies; therefore it has the greatest amount of timber production. Alternative C does not allow for a timber production program.

Table 2-17. Comparison of the Timber Harvest Issue by Alternative

	Alternative						
	A	B	C	D	E	F	G
Age Class Distribution in 2040	Percent of Forested Acres						
0-10 (1% in 2010)	3	3	0	5	2	1	2
11-40 (9% in 2010)	7	7	1	10	5	3	5
41-80 (7% in 2010)	10	10	10	8	10	10	10
81-100 (36% in 2010)	1	1	1	1	1	1	1
101-130 (33% in 2010)	34	34	40	34	35	38	35
131-150 (8% in 2010)	25	25	27	24	26	26	26
150+ (6% in 2010)	20	20	21	18	21	21	21
Timber Management	Acres In Thousands						
Lands Suitable for Timber Production	350	486	0	482	366	278	439
	Acres In Thousands						
Acres Harvested (Total First Decade)	30	30	0	42	18	10	18
	MMBF						
Allowable Sale Quantity (Total First Decade)	235	271	0	505	155	102	271
	MMCF						
Allowable Sale Quantity (Total First Decade)	47	54.3	0	101	31.1	20.4	54.3
	Percent of Current Annual Demand of GWNF Timber						
Timber Sale Program Quantity as a Percent of Demand	18	21	0	36	12	8	21

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.

Table 2-18 highlights the differences between the alternatives' effect to the local communities with respect to economic impacts, such as jobs and income.

Table 2-18 Comparison of the Economics and Local Community Issue by Alternative

	Alternative						
	A	B	C	D	E	F	G
Average Annual Jobs Contributed by Forest Service Management, Decade 1	1,087	1,037	578	1,169	752	895	836
Average Annual Labor Income from Forest Service Management (thousands of dollars) , Decade 1	$42,004	$39,303	$16,437	$44,589	$25,187	$32,702	$28,421
Cumulative Decadal Present Net Values of Benefits and Costs (millions of dollars, 4% discount rate cumulative to midpoint of 5th decade)	$1,640	$1,669	$1,399	$1,796	$1,546	$1,738	$1,695

Climate Change

ISSUE STATEMENT: Changes in climate may require adaptation strategies that facilitate the ability for 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 or sequestering carbon or enhancing opportunities for alternative energy sources (wind, biomass, solar).

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. Whether temperatures rise or moisture regimes become drier or wetter, most people support the development of a plan that maintains or restores healthy and resilient ecosystems that can adapt to future changes. Comments suggest that the Plan should address reducing current threats to forest conditions, such as from non-native invasive species, pests and pathogens, acid deposition, or human uses of forest resources. Some comments identify the need to provide migration corridors, which include altitudinal gradients, for plant and animal species, especially those most vulnerable to changing climate conditions. Another adaptation strategy is to reduce other stressors to species that are vulnerable to climate change impacts. Other comments requested that we evaluate how management activities may exacerbate, mitigate or enhance effects of a changing climate. Others identified the importance of the forest's role in carbon sequestration.

The alternatives provide different emphases on both adaptation (ways to maintain forest health, diversity, productivity, and resilience under uncertain future conditions) and mitigation (such as carbon sequestration by natural systems, ways to provide renewable energy to reduce fossil fuel consumption, and ways to reduce environmental footprints). These emphases focus 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;

5) Responding to demands for cleaner energy including renewable or alternative energy; and

6) Providing sustainable operations and partnerships across landscapes and ownerships.

Reduce Vulnerability by Maintaining and Restoring Resilient Native Ecosystems

Alternative C focuses on passive restoration and relies predominantly on natural processes to reduce

vulnerability. Alternative C will do some active restoration in reducing roads which may improve the ability for some species to disperse, reduce sedimentation in streams, and reduce the spread of non-native invasive species. The reduction of roads would also reduce access to areas for management activities that could improve diversity and address recreation needs. Alternatives A, B, D, E, F, and G all use a mix of active and passive restoration strategies. Alternative E has the most aggressive approach to active restoration with the largest prescribed fire program and active vegetation management through timber harvest and maintenance of grasslands and shrublands. Alternatives A, B, D, E, and G maintain management options to address changes in the sensitive spruce system in Laurel Fork. Alternatives B, C, D, E, F, and G all utilize the Ecological Sustainability Evaluation tool to develop strategies to maintain and restore the nine ecological systems and the species with special needs. All of these alternatives incorporate the use of wildfire as a tool for achieving resource management desired conditions. All of these alternatives utilize planting of blight-resistant American chestnuts as a restoration tool (Alternatives B, D, E, F, and G allow for more opportunities for planting in open conditions which are likely more conducive to establishment of stands of American chestnut). Alternatives B, D, E, F, and G all maintain or restore ecological conditions that are rare on the GWNF, such as high elevation grasslands and early successional habitat, open woodlands, and old fields. These alternatives all identify the need to address shortleaf pine restoration opportunities.

Watershed Health

Alternative A places a high priority on protecting water quality through the identification of riparian areas and standards that fully protect water quality. This alternative did not address many of the practices and objectives discussed for the other alternatives, but these practices and objectives would be in keeping with the goals of Alternative A.

Alternatives B, C, D, E, F, and G all incorporate the following:

- Beaver meadows, wetlands, and floodplains are protected and restored to improve natural storage, reduce flood hazards, and prolong seasonal flows.
- Riparian forests are protected and restored to moderate changes in stream temperature, maintain stream bank stability, and provide instream habitat.
- Aquatic migration barriers are removed and habitat connectivity re-established so that species can move to more suitable habitat, or move to or from refugia.
- Flood and wildfire risks are reduced in vulnerable watersheds to prevent increased surface erosion and mass wasting leading to aggradation of river channels.
- Roads are improved or decommissioned to reduce adverse impacts during large storms to prevent surface erosion and fill slope failure and landslides. Stream crossings and bridges are constructed to withstand major storm and runoff events.
- Standards are included to assess geologic hazards for management activities, including potential landslide hazards and risks, particularly as the population and infrastructure continue to increase in areas adjacent to the National Forest.
- Bare soil is revegetated as soon as possible and suspend or eliminate recreation uses that are causing elevated sediment levels to streams and large areas of long term loss of soil productivity outside the designated use area.
- Riparian buffers are increased and standards included for protecting channeled ephemeral streams.
- Soils highly sensitive to acid deposition and nutrient loss are identified. Whole tree harvesting is not allowed in those areas.

Alternative C would have fewer opportunities to restore stream channels, address acidified streams, address geologic hazards and address fire risks than the other alternatives due to the greater acreage in wilderness.

Carbon Sequestration

Alternative C relies on old-aged forests to sequester carbon. The other alternatives use a mix of old-aged forests and harvest to regenerate new forests. The regeneration also has the advantage of creating a diversity of ages and structure in the forest to provide multiple strategies for addressing carbon storage. All of the alternatives are skewed to emphasize a substantial portion of the forest to be in older aged stands.

Forest management in Alternatives A, B, D, E, F and G can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning will increase forest carbon in the long run.

Existing Stresses

Aside from the stresses identified in watershed health and restoring resilient native ecosystems, non-native invasive species is a key existing stress on systems. Alternatives B, C, D, E, F, and G all take an aggressive approach to controlling non-native invasive species and preventing their introduction and spread. An early detection and response strategy associated with non-native invasive species will be critical to limit new introductions. Aggressive treatment of established invasive species, along with the control of insects and diseases, are likely to become more critical to maintaining desired conditions for healthy forests under a changing climate. Due to the fragmented land ownership patterns, success in reducing forest pests will sometimes require going beyond national forest boundaries, and continued work with partners will be needed. In addition, management practices (such as thinning and age class diversity) that sustain healthy forests and provide adequate nutrients, soil productivity, and hydrologic function promote resilience and reduce opportunities for disturbance and damage. Alternative C would reduce the spread of many non-native invasive species by restricting management that creates openings in the forest canopy. However, it also restricts the ability to use some control activities in wilderness and to use silvicultural techniques to manage pests like the southern pine beetle.

Alternative Energy Demands

The sources of renewable or alternative energy that can be provided on the GWNF include wind energy, solar energy, and natural gas leasing. Alternative A has the largest area of the GWNF available for gas leasing. Alternative C allows no gas leasing. The other alternatives allow for an intermediate level of development. Development of wind energy is allowed in some areas of the GWNF in alternatives B, D, F and G with the most area available in Alternative D. Alternatives C and E do not allow the development of wind energy on the GWNF.

Sustainable Operations and Partnerships

Under all of the alternatives the GWNF will work with the state of Virginia to incorporate the greenhouse gas emissions from our management activities into a State inventory, just as we have done with the fine particulates inventory. The Forest will continue striving to reduce its environmental footprint and decrease the greenhouse gases emitted through day-to-day operations, including the use of more fuel-efficient vehicles, reducing the number of miles driven and making facilities more energy-efficient. The Forest will also continue working with partners, including other federal agencies, State and local governments, non-governmental organizations and other stakeholders to be more effective in efforts to adapt lands, ecosystems, and species to climate change. Examples are the Nature Conservancy in the Fire Learning Network and the Chesapeake Bay Partnership.

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