

CHAPTER 3 – STRATEGY

LAND ALLOCATION STRATEGY

The 1982 planning regulations guiding implementation of the National Forest Management Act call for lands and waters to be assigned to “management areas” (36 CFR 219.11). Management prescription areas are areas within a national forest having common biological, physical, watershed and social conditions, desired conditions, suitable uses, management objectives, and design criteria (standards). Taken together, these attributes constitute the “prescription” for a management area. The desired conditions and standards that apply to each management prescription area are described in Chapter 4.

It is important to note that the same area of land could be allocated to several Management Prescriptions, such as a Special Biological Area that occurs within a Designated Wilderness or the Appalachian National Scenic Trail Corridor that passes through a Designated Wilderness. The management prescription that has the most stringent management requirements is the one allocated to the area and is the one shown on the Management Prescription Areas map that accompanies this Forest Plan. Therefore, Table 3-1 includes the acreage of a Special Biological Area that occurs within a Designated Wilderness area as part of the acreage for Designated Wildernesses and not Special Biological Areas. Actual acres are provided in the background descriptions for each Management Prescription Area in Chapter 4.

Table 3-1. Land Allocation of Management Prescription Areas, as mapped hierarchically

Code	Management Prescription Area Description	Rx Map Acres*
1A	Designated Wilderness	43,000
1B	Recommended Wilderness Study Areas	27,000
2C2	Eligible Wild and Scenic Rivers-Scenic	2,000
2C3	Eligible Wild and Scenic Rivers-Recreation	4,000
4A	Appalachian National Scenic Trail Corridor	9,000
4B1	Research Natural Areas (actual 3,900 acres)	2,000
4C1	Geologic Areas	3,000
4D	Special Biological Areas (actual 63,000 acres)	53,000
4D1	Key Natural Heritage Community Areas	3,000
4E	Cultural Areas	<100
4F	Mount Pleasant National Scenic Area	8,000
4FA	Shenandoah Mountain Recommended National Scenic Area	67,000
5A	Administrative Sites	<100
5B	Communication Sites	<100
5C	Utility Corridors	7,000
7A1	Scenic Byways	5,000
7B	Scenic Corridors and Viewsheds	34,000
7C	ATV Use Areas	10,000
7D	Concentrated Recreation Zones	1,000
7E1	Dispersed Recreation Areas – Unsuitable for Timber Production	24,000
7E2	Dispersed Recreation Areas – Suitable for Timber Production	4,000

Code	Management Prescription Area Description	Rx Map Acres*
7F	Blue Ridge Parkway Corridor	4,000
7G	Pastoral Landscapes	4,000
8E4a	Indiana Bat-Primary Conservation Areas	2,000
8E4b	Indiana Bat-Secondary Conservation Areas	14,000
8E7	Shenandoah Mtn Crest-Cow Knob Salamander (actual 58,000 acres)	24,000
11	Riparian Corridors (actual 51,000 acres)	Not mapped
12D	Remote Backcountry Areas	201,000
13	Mosaics of Habitat Areas	508,000
	Water – Lake Moomaw	2,500
Total Acres		1,066,000

* The acres represent the most stringent management prescription. For example, Special Biological Area acres that occur within a Designated Wilderness are included in the acres shown above for Designated Wilderness.

MANAGEMENT APPROACH AND OBJECTIVES

The Management Approach is a summary of management actions that will be used to move the Forest towards the desired conditions identified in Chapter 2. The management approach is not a required section of the plan and is not binding but it provides a framework to describe the measures expected to be used within our current and anticipated levels of funding, staffing and partnerships opportunities.

Objectives identify the measures projected to be implemented to move the Forest toward the desired conditions. They are concise, time-specific statements of measurable planned results. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving Forest Plan direction. These objectives are strongly influenced by recent trends, past experiences, current staffing levels, and anticipated near-term budgets. They express what we believe can realistically be achieved over the next 15-year planning period for this Plan.

WATERSHED RESOURCES (WATER, SOIL, AIR, AND GEOLOGY)

Management Approach

The achievement of desired conditions for healthy watersheds is a combination of maintaining, restoring, and monitoring the soil, water, air and geologic resources on the GWNF. Much of the impacts to water resources are due to activities upstream or downstream from the areas managed by the Forest Service. Groundwater and air quality issues also cross national forest boundaries and are affected by multiple region-wide impacts such as increased agricultural use, growing urban development, cumulative effects from regional emissions and discharge sources, and slow recovery from past actions. Therefore, our strategy is to focus on sustaining and improving watershed areas within national forest control while working cooperatively with other agencies and landowners to improve statewide watershed health.

Producing favorable flows of water was one of the purposes of the Weeks Act when it was passed in 1911 to allow the purchase of lands to become National Forests. At the 100th anniversary of this Act, the Forest continues to emphasize protection of water quality and quantity to meet the needs of Forest resources and of downstream water users. The management approach begins with protection of the aquatic systems and adjacent terrestrial lands, the floodplains and riparian areas with a management prescription area that incorporates all of the protections of the Federally Listed Threatened and Endangered Mussel and Fish Conservation Plan previously developed to protect threatened and endangered aquatic species. Watershed

management continues with the identification of priority watersheds, which highlight those watersheds with sensitive aquatic species, currently identified water quality concerns due to private land or natural causes (impaired streams), and public water supplies. The list of priority watersheds may change over time as new sensitive species are identified or as water quality concerns are abated. The current list, with a more detailed description of the selection process, is in Appendix D.

These priority watersheds will be a priority for inventorying soil and water improvement needs, restoring streams and streamside systems to fully functioning systems, restoring habitat for sensitive aquatic and riparian species, addressing opportunities to reduce impacts from roads through relocation or decommissioning, and evaluating any new proposals for special uses that could affect water quality. Protecting these watersheds is a cooperative effort, so proposed actions in these watersheds will be closely coordinated with partners such as State agencies and local communities dependent upon the water.

Public Water Supply watersheds as identified by the Commonwealth of Virginia for North River, Dry River and Skidmore Fork (and the watershed upstream of the Dry River PWS), Pedlar River (and watershed upstream of Pedlar River), Smith Creek, North Fork of Shenandoah, North Fork Shenandoah-Cedar Creek, Jackson River, and Coles Run are not suitable for oil and gas leasing.

Management of healthy forests to make them more resilient to impacts from climate change, increased development and other disturbances is another key to watershed management. Desired conditions and objectives for the ecological systems will also enhance watershed conditions. The Forest will continue to work cooperatively with other agencies, groups and individuals to strengthen actions to protect and highlight water quality on the forest and on adjacent lands. These cooperative actions will highlight drinking water watersheds and management within the Chesapeake Bay watershed. Many of the standards developed for management prescription areas were developed to ensure that management activities that occur outside the riparian areas are also designed and implemented to protect water quality. Road management decisions regarding maintenance levels, seasonal closings, decommissioning and construction will all be done after careful consideration of potential impacts to water quality. Water monitoring will continue to be implemented to assure that streams are maintained in a condition to support the diverse aquatic communities in the Forest streams. As the largest Federal land manager in the Bay watershed, the Forest fully supports measures like the current EPA841-R-10-002, Guidance for Federal Land Management in the Chesapeake Bay Watershed, Executive Order 13508, Federal strategy to "protect and restore" the Bay watershed and the Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorous and Sediment, EPA 2010.

Soil productivity on the Forest can be affected by activities that disturb the soil surface such as vegetation management projects, fire management, and use of trails and roads. Each national forest has distinct soil characteristics that must be managed appropriately to avoid erosion, compaction, rutting, and drainage issues. Our management strategy for protecting soil condition is to use Virginia and West Virginia Best Management Practices (BMPs) and match national forest activities with specific soil types and topography to minimize erosion. Use of riparian standards to protect wetland communities and perennial, intermittent and channeled ephemeral streams, restrictions on mechanical equipment operation, installation of water diversions, and careful designing and engineering of roads and firelines are just a few of the BMPs that are used during ground disturbing activities on the GWNF.

Soils that are determined to be low in natural fertility and have low buffering capacity to acid deposition will be managed to ensure that any planned activities will not affect the long-term productivity of the land. Woody biomass (defined as vegetation removed from the forest, usually logging slash, small diameter trees, tops, limbs or trees not considered merchantable in traditional markets) utilization will be limited on soils identified as high risk for soil acidification and nutrient depletion due to atmospheric deposition. High risk soils are determined by using atmospheric deposition, elevation and geologic data as well as vegetation and soils information.

On the GWNF, prescribed burning is the management activity most likely to contribute to air emissions. The prescribed burning levels associated with returning the Forest to more historic fire conditions will require an increase in forestwide prescribed burn acreages from recent years. This increase in prescribed burning was anticipated and the Forest worked with Virginia Department of Environmental Quality (VDEQ) and other state

air agencies to incorporate these increases into the emissions inventory used by VDEQ for Regional Haze and Ozone State Implementation Plans. Air modeling analyses projected out to 2018 show that even with the increase in prescribed fire emissions on the Forest, the State should be able to attain National Ambient Air Quality Standards (NAAQS) and show reasonable progress in visibility improvement. It is the intent of the Forest to maintain a working relationship with VDEQ to ensure that emissions from Forest activities continue to be appropriately incorporated into future emissions inventories. Smoke management procedures will continue to be integrated into our fire management activities to improve regional air quality.

The Forest will continue to participate with state agencies and the EPA in evaluating new air pollution permits and procedures to address existing air pollution with the intent of continuing to show improvement in visibility and to restore resources adversely affected by acid deposition.

Major geologic resources, such as known caves, are managed as a separate management prescription area (4C1) designed to protect these sensitive resources. As geologic hazards are identified, site-specific plans are prepared to address the hazard. Karst areas and caves are protected with standards. Special Uses permits, land adjustments, and applications for permits to drill for gas and other management activities that could affect groundwater resources are evaluated for their potential to affect groundwater quality. Design of management activities are based on recognition of lithologic diversity and other geologic diversity that are the foundation of, and requirement for, biological diversity. Lithology and other geologic components are incorporated into assessments and management responses to acid precipitation and climate change. For Forest Service projects, use of mineral material sources on the Forest will be considered to reduce costs and reduce the carbon footprint of using off-Forest sources.

Planning for all Forest projects and resource management plans and activities (including grants and agreements, special uses, and interagency agreements) should determine: 1) whether the affected lands are subject to reserved or outstanding mineral rights; and 2) if so, whether these private mineral rights may affect or be affected by the proposed action.

Objectives for Watershed Resources

OBJ WTR-1: To provide appropriate instream habitat, aquatic organism passage, water quality, riparian habitat, or healthy biological communities for desired aquatic species, 250-350 miles of streams per decade are restored, sustained or enhanced.

OBJ WTR-2: To provide appropriate lake habitat, aquatic organism passage, water quality, riparian habitat, or healthy biological communities for desired aquatic species, 250-350 acres of lakes per decade are restored, sustained or enhanced.

OBJ WTR-3: Streambanks are managed in a manner that restores and maintains amounts of Large Woody Debris (LWD) sufficient to maintain habitat diversity for aquatic and riparian-dependent species (approximately 200 pieces¹ per stream mile).

OBJ WTR-4: Watersheds are managed in a manner that results in sedimentation rates that stabilize or improve the biological condition category of the stream as monitored using aquatic macroinvertebrates.

OBJ WTR-5: Improve watershed and soil conditions across 450-550 acres per decade. Priority for treatment will be given to watersheds listed as Priority Watersheds and areas identified in Forest project priority criteria and annual work planning.

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

ECOLOGICAL SYSTEMS DIVERSITY

Management Approach

The main strategy for moving toward desired conditions for ecosystem diversity is to manage vegetation structure and composition to support healthy, functioning ecological systems. However, for the rare communities the main strategy involves establishment of Special Biological Areas where the primary goal is to restore and maintain the rare community. Implementation strategies will be developed for some Special Biological Areas to identify any needed management actions and monitoring. Most of the ecological systems are represented on the landscape where they would be expected.

The GWNF, for the most part, does not have major ecotypes that were converted to other forest types from previous activities. Forest vegetation structure and composition of the understory, however, are often key features in need of restoration. Part of the vision of this Plan is to create open woodland settings and forest structures to support native plant and animal species by mimicking disturbances within the natural range of variability. Management is directed at developing landscapes that represent typical disturbance regimes for each ecological system. For instance, restoration of historic fire regimes, including appropriate return intervals, seasonality, and intensity, is inherent to sustaining native ecological systems such as Pine Forests and Woodlands. While it may take many decades to completely achieve these ecosystem conditions, actions initiated during the next 15 years covered by this Plan will set the stage for continued progress.

The Spruce Forests system is currently limited to the Laurel Fork area. This system occupies about one-half of the area where it likely has the potential to exist. While the system is very limited on the GWNF, in adjacent West Virginia and on the Monongahela National Forest, it is more extensive. The greatest stresses and threats to this system include climate change and acid deposition. Strategies for restoring and maintaining the Spruce Forests system should emphasize restoring spruce to those sites where Norway spruce and red pine have been planted and maintaining conditions favorable to continued growth of existing stands. The Laurel Fork area should continue to be managed to restore and maintain the Spruce Forests by planting red spruce seedlings and releasing red spruce seedlings that are suppressed by hardwoods.

Forest strategies for restoring, maintaining, and enhancing the Northern Hardwoods Forest ecological system should emphasize maintaining this system on the lands where it occurs. Some regeneration management activities could take place, but it would not be a high priority. Stresses and threats to this system include climate change, acid deposition and invasive species (hemlock woolly adelgid).

The management strategy for the Cove Forests is to utilize timber harvest to approach the early successional habitat objective since fire is not a common disturbance in this system except in the driest of conditions. The greatest stress and threat to this system are invasive plants due to the moist, rich soil conditions of these sites.

Forest strategies for maintaining and enhancing the Oak Forests and Woodlands systems will integrate the use of timber harvest and fire. These management tools can occur independently or together on the same acres. The greatest stresses and threats to the oak forest and woodlands system are the lack of open conditions needed to establish and maintain oak reproduction and the competition of faster growing species due to the exclusion of fire or infestations of non-native invasive species. We will rely heavily on utilizing fire to restore and maintain more open canopy conditions and grassland/shrublands. Timber harvest will be another frequent technique of creating regenerating forests and creating desired more open canopy conditions. Given its importance as a food source for many wildlife species, maintaining a high percentage of oak in ages that produce mast is also important. Planting American chestnut that is resistant to the Asian chestnut blight is an important restoration activity that would occur mostly in these systems.

Grassland/shrublands will also be maintained through direct creation and maintenance activities, such as periodic mowing.

Fire will be the prime strategy for maintaining and enhancing the Pine Forests and Woodlands systems. Timber harvest will also be used to a lesser extent for regeneration. Restoration of short-leaf pine by planting is a restoration strategy that would be focused on where it historically occurred on the landscape. The greatest stresses and threats to this system are lack of disturbance to create regeneration and open woodland structure, invasive species including the native pine bark beetle, and climate change that could reduce rainfall and make insect outbreaks more common.

Forest strategies for maintaining, and enhancing the Mafic and Alkaline Glades systems include prescribed fire and managing wildfire, control of non-native invasive plants, and monitoring and managing recreation use in the areas. These systems are uncommon on the Forest so their limited distribution is a stress. Other important stresses and threats to these systems include the lack of fire, non-native invasive plants, and trampling from excessive recreation use.

Forest strategies for maintaining and enhancing the Cliff, Talus and Shale Barrens systems include prescribed fire and managing wildfire, control of non-native invasive plants, managing deer browsing, and monitoring and managing recreation use in the areas. The major stresses and threats to these systems include the lack of fire, non-native invasive plants, problematic native species (deer browsing), trampling from excessive recreation use, and altering the normal disturbance regimes that maintain the character of the cliff, talus and barren features (rock slides, stream erosion).

Forest strategies for maintaining and enhancing the Caves and Karstlands system include management, primarily through the use of Forest Plan standards, to maintain the hydrology and protect the water quality in areas draining into cave systems or in karst terrain. The greatest threats or stresses on this system are alteration of the hydrology that supports the system and degradation of water quality. This includes changes to the groundwater and surface water flow and human caused impacts to water quality such as improper pesticide use or disposal of harmful materials in sinkholes. These features are protected both from recreational damage and from polluted water, which, in turn, protects the species that depend on them. Monitoring of cave use and gating caves when needed to protect cave features and the biota are also components.

The management approach for the Floodplains, Wetlands and Riparian Areas ecosystem is defined by the desired conditions and standards for the Management Prescription Area 11-Riparian Corridors.

During the development of projects to move the Forest towards the desired ecological conditions, project objectives may be developed based on the individual ecological systems (such as Southern Appalachian Oak Forest), rather than the ecological system groups (such as Oak Forests and Woodlands) that are described in Chapter 2 of the Plan.

Objectives for Ecological Systems Diversity

Regeneration

OBJ ESD-1: Approximately 18,000 acres to 30,000 acres of forest will be in the 0-10 year age class from regeneration harvest by the end of the first decade. Of this regeneration:

- The majority of this would be created in the Oak Forests and Woodlands system.
- A maximum of 1,000 acres would be created in the Northern Hardwoods system.
- A maximum of 2,400 acres would be created in the Cove Forests system.
- A maximum of 16,000 acres would be created in the Pine Forests and Woodlands system.

Mid-Late Successional Habitat

OBJ ESD-2: The following acreage of each ecological system will be in mid-late successional stages by the end of the first decade:

- Approximately 12,000 to 13,000 acres of the Northern Hardwoods system.
- Approximately 57,000 to 59,000 acres of the Cove Hardwoods system.
- Approximately 141,000 to 157,000 acres of the Pine Forests and Woodlands system.
- Approximately 690,000 to 710,000 acres of the Oak Forests and Woodlands system.

Spruce Forests Ecological System

OBJ ESD-3: The current acreage of approximately 600 acres of the Spruce Forests ecological system is maintained and additional spruce sites are reestablished to a total of about 1,300 acres. Areas in Laurel Fork where red pines have been planted should be restored to red spruce.

Northern Hardwoods Forests Ecological System

OBJ ESD-4: The area of the Forest represented by the Northern Hardwoods Forest ecological system remains essentially the same, although a small portion (about 800 acres) could be restored to Spruce Forests.

Cove Forests Ecological System

OBJ ESD-5: The area of the Forest represented by the Cove Forests ecological system remains essentially the same.

Oak Forests and Woodlands Ecological System

OBJ ESD-6: The area of the Forest represented by the Oak Forests and Woodlands ecological system remains essentially the same; however, there will be a slight shift in acres from oak-pine systems to pine-oak and pine systems as the use of fire increases. By the end of the first decade:

- Approximately 90,000 acres of forest are in open canopy conditions to maintain forest health and sustain foraging and nesting opportunities for species.
- An estimated 74,000 acres of this fire-dependent ecosystem have received a fire return interval of 5-15 years.
- Approximately 8–10% of the open canopy creation and regeneration acres has occurred at elevations greater than 3,000 feet.
- Approximately 1,000 acres of forest are planted to American chestnut. Most of this planting will occur in the Oak Forests and Woodlands system.
- To restore the ecological health of the forest, one American chestnut research and restoration (seed orchard) site is established on the forest and 1 to 4 American chestnut restoration projects per district are developed in partnership with other American chestnut support organizations.

Pine Forests and Woodlands Ecological System

OBJ ESD-7: The area of the Forest represented by this ecological system remains essentially the same; however, there will be a slight shift in acres from oak-pine systems to pine-oak and pine systems as the use of fire increases. By the end of the first decade:

- Approximately 18,000 acres of previously closed canopy stands are in open canopy condition to maintain forest health and sustain foraging and nesting opportunities for species.
- An estimated 18,000 acres of this fire-dependent ecosystem have received a fire return interval of 3-8 years.
- Approximately 8–10% of the open canopy creation and regeneration acres has occurred at elevations greater than 3,000 feet.
- Approximately 800 acres are returned to shortleaf pine forests.

Alkaline and Mafic Glades and Barrens Ecological System

OBJ ESD-8: An estimated 3,000 acres of Central Appalachian Alkaline Glades and Woodlands and 700 acres of Mafic Glades and Barrens on the Forest continue to be present. By the end of the first decade, 30% of these systems are at their desired conditions in regard to fire regime, non-native invasive species control, open structure and lack of recreation impacts.

Cliff, Talus and Shale Barrens Ecological System

OBJ ESD-9: An estimated 14,000 acres of the Cliff, Talus and Shale Barrens ecological system on the Forest continue to be present. By the end of the first decade, 25% of the shale barren systems are at their desired conditions in regard to fire regime, non-native invasive species control, open structure and lack of impacts from deer and recreation.

Floodplains, Wetlands and Riparian Areas Ecological System

OBJ ESD-10: An estimated 51,000 acres of Floodplains, Wetlands and Riparian Areas on the Forest continue to be present and functioning. Some wetland systems have increased in extent due to beaver activity.

Caves and Karst Ecological System

OBJ ESD-11: Human impacts on caves are not adversely affecting the hydrology or biology of any caves.

Special Biological Areas (SBAs)

OBJ ESD-12: Develop strategies for management of 3-5 SBAs annually. Based on periodic monitoring of known special biological areas, identify management activities needed to maintain, enhance or restore the habitat of threatened, endangered, sensitive, and locally rare species, and implement an annual program of work designed to meet these needs.

SPECIES DIVERSITY

Management Approach

As noted throughout the Plan, managing for ecosystem diversity is integral to providing appropriate ecological conditions for a diversity of plant and animal species. In addition to relying on management strategies for ecosystem diversity, species habitat conditions are dependent on a variety of integrated resources and management activities. Management strategies for soils, water, fire regimes, vegetation management, infrastructure, and other resource areas also contribute to healthy conditions for a diversity of plants and animals.

Protection and conservation of threatened and endangered (T&E) species drive much of the Plan direction and are a fundamental part of the overall management strategies for species diversity. The T&E species have recovery plans, and the strategy is to follow the finalized plans. The program priorities for T&E species include:

- Implement Forest Service actions as recommended in final recovery plans for federally listed species. In the absence of an approved recovery plan, implement and, if necessary develop interim Forest Service conservation measures. Update interim conservation measures as needed when new science becomes available.
- Work with USFWS and other conservation partners to develop recovery plans for new federally listed species and candidate conservation agreements for species proposed for listing.
- Coordinate with partners to implement measures to resolve conflicts with threatened and endangered species and their habitats.
- Cooperatively monitor trends in population and/or habitat of federally listed species. Amend the Plan as needed when new populations are found.

An important aspect of managing habitat for species is the cooperative work with the Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation Natural Heritage Program, the West Virginia Division of Natural Resources, and US Fish and Wildlife Service. The GWNF will continue the long tradition of working closely with these agencies in all management of species and habitat. This includes work to meet the strategies outlined in each state's wildlife conservation plans and their plans for management of game species.

Most species needs are covered by plan components for ecosystem diversity and documented in the Ecosystem Diversity Report (FEIS, Appendix E). However, in some circumstances, species require additional plan components specific to their needs. These species and the plan components that address their needs are described and documented in the Species Diversity Report (FEIS, Appendix F). The management approach for these species includes additional objectives and standards. Most of these were developed to meet the needs of groups of species with similar habitat needs or management strategies. The following strategies were developed for the species identified in the Species Diversity Report as belonging to each group.

Calciophiles. The communities that are most representative of the calciophile associates are established as Special Biological Areas. These include all the areas recommended by the Virginia Natural Heritage Program. As additional significant areas are identified they will be added as Special Biological Areas.

Cavity or Den Tree Associates. Cavity and den trees are generally not limiting and with the increasing age of trees in most of the ecological systems, cavity and den trees will become even more common. The key characteristics for this group are recruitment of new den/cavity trees and retention of existing trees, particularly in areas where management activities are planned. This will be done through the use of den/cavity tree and snag desired conditions and standards.

Cliff, Talus and Rock Outcrop Associates. Cliff, talus and large rock outcrop areas have specific desired conditions and standards. These areas will be managed to enhance habitat for threatened, endangered, sensitive and locally rare (TESLR) species that may occur there.

Hard and Soft Mast Associates. Habitat for these associates will be provided by the restoration and maintenance of the open woodlands, regenerating forests and existing shrublands that produce a mixture of hard and soft mast.

High Elevation Coniferous, Deciduous and/or Mixed Forest Associates. The forested environment at high elevations (>3,000 feet) will be managed to include all successional stages. Spruce restoration may include planting red spruce seedlings, removing exotic tree plantations, and releasing red spruce from a hardwood overstory.

Lepidopterans. Specific butterflies and moths in this species group are limited in occurrence on the GWNF and may be especially sensitive to the direct effects of fire. Care should be taken on prescribing the season, size, and intensity whenever fire is used in areas where they are known to occur. There are no direct key characteristics for this group; however monitoring of habitat and/or populations can determine if negative impacts are occurring. When developing prescribed burn plans, the following should be considered at a minimum for all species in this group:

- Is any species from this group present or potentially present in the project area?
- Is habitat for the species present in the project area?
- What are the negative & positive effects of fire to the species and habitat?
- What mitigation can be performed to reduce impacts to species, i.e. burning during specific part of life-cycle (hibernation, non-breeding, dormancy, etc.); protecting individuals from direct effects of fire; protecting duff layer in mesic areas; etc.?
- Are there sufficient populations of this species adjacent to the project area to re-populate after the project?
- Are there any additional habitat management techniques that can be used to reduce impacts such as mechanical thinning or removal of vegetation?

Consideration of, and mitigation for, these questions should provide for species in this group.

Species Needing Occurrence Protection. These species are rare in occurrence across the forest and known populations should be protected. Implement the Species Occurrence standards to protect these species.

Open Area Associates. All types of openings are important and existing grasslands and shrublands of all sizes should be maintained. For some species it is key to maintain openings of a given size (greater than 40 acres or greater than 100 acres). Moving towards the desired open woodland component of the Oak Forest and Woodland and Pine Forest and Woodland ecological systems will produce open woodlands of a variety of sizes, including those greater than 100 acres in size. Meeting the regenerating forest objectives and objectives for openings at high elevations are also essential for this group. It is also beneficial that these open conditions be incorporated within a forested environment. Many species, particularly bird species, need a combination of closed canopy and open canopy conditions during various parts of their life cycle.

Ruderal Associates. These species require the continued management of the open character of old home sites, roadsides, old fields where these species are found.

Sandstone Glade and Barren Associates. Establish Special Biological Areas for areas that represent high quality examples of this habitat.

Species Sensitive to Over-Collection. The strategy for these species is to continue to educate the public on species needs, restrict access to known populations, and limit approval of collections of these species to permitted scientific purposes only.

Species Sensitive to Recreation Traffic. The species on this list currently occur outside of Special Biological Areas, rare, and wetland communities. There are no ecosystem diversity plan components which cover these species. The strategy for these species is to continue to educate the public on species needs, restrict access to rare or sensitive populations (this may include road or trail relocation, Forest Supervisor closure orders, barriers, and other means), and implement standards to protect these species where they occur during projects that involve heavy equipment or ground disturbance. New roads and trails should be located to avoid populations of these species and existing roads and trails should be evaluated for closure if they are causing declines to populations. Many roads on the Forest are not under our control, so partnerships and collaborative efforts may be required to help sustain species in this group.

Other Species. The habitat needs of the following two species could not be fully met through the ecological system direction or the direction for the species groups. These two species are dependent upon both riparian systems and terrestrial systems. Specific direction for each species is added to address their needs that are not met through species groups or ecological system direction.

Tiger Salamander. New Special Biological Areas are created to protect the newly found eastern tiger salamander populations. This includes habitat management between all the ponds to allow for long-range dispersal, including mature forest and low stem densities. It is recognized that local amphibian population persistence requires sufficient terrestrial habitat, the maintenance of habitat quality, and connectivity among local populations.

Wood Turtle. In watersheds with known populations of wood turtles: 1) Maintain or create openings in riparian areas for turtle foraging and thermoregulation; 2) Manage and protect known existing nest sites; 3) Create additional suitable nest sites where appropriate; 4) Maintain or create instream woody debris; 5) Minimize sediment, pollutant, and pesticide loading to stream channels; 6) Avoid channelizing streams, impounding streams, and stabilizing streambanks with over-hanging vegetation; 7) Allow beaver activities that create suitable habitat; 8) Identify hibernacula with significant turtle concentrations and/or other areas where there is a high potential for human interaction with wood turtles; 9) Evaluate the need for seasonal restrictions on road use or other activities (such as in stream activities) to protect the turtle; and 10) Mowing decks will be raised a minimum of 8 inches above the ground when mowing near streams. Within the Paddy Run watershed, including Vance's Cove: 1) manage road use to reduce vehicular traffic

during times of the year when turtles are most active, especially during nesting season; 2) create and/or maintain openings with a mixture of grass, forbs and shrubs in the riparian corridor for turtle foraging areas; 3) avoid or mitigate disturbance from vegetation management activities near streams and seeps during times when the turtles are active; 4) create nest sites away from roads and trails; 5) place LWD and rootwads into the stream channel to provide over-wintering habitat; and 6) identify opportunities to reduce human-turtle interactions. See Final EIS Appendix G (Section 3.5) for additional details on these management strategies for the wood turtle.

Old farm tracts and those areas managed in Management Prescription Area 7G - Pastoral Landscapes provide important habitat for many species. This habitat includes open grasslands, shrublands, and riparian forests. Grazing allotments, special uses for hay production, and mowing are all appropriate tools to maintain these habitat conditions. Management of these areas, the appropriate tools to use, and the desired mix of open areas and riparian forests will be evaluated during implementation of the Plan.

Objectives for Species Diversity

OBJ SPD-1: Maintain and enhance old fields, short/medium/tall grasslands at old farm tracts at Hidden Valley, Evans Tract, Wallace Tract, Marshall Tract, Whitting Tract, Cullers Tract Moody Tract, and Zepp Tannery. Maintain some of these areas in tracts 100 acres or larger in size.

OBJ SPD-2: Maintain at least 2,700 acres of grassland habitat. Maintain all current areas that are greater than 40 acres in size in patches at least that size, or greater. Maintain all current areas that are greater than 100 acres in size in patches at least that size.

OBJ SPD-3: Maintain at least 1,500 acres of shrubland habitat.

OBJ SPD-4: Approximately 18,000 to 30,000 acres of forest will be in the 0-10 year age class from regeneration harvest at the end of the first decade.

OBJ SPD-5: Restore and maintain 12,000 acres to 20,000 acres of forest in open woodland conditions through the use of wildland fire on an annual basis.

OBJ SPD-6: Create or maintain grasslands, shrublands or regenerating forests on approximately 1,000 acres at elevations greater than 3,000 feet on a decadal basis.

OBJ SPD-7: Maintain or create old fields or clusters of maintained openings on sites greater than 2,000 feet elevation on at least fifteen sites around the forest.

OBJ SPD-8: Maintain a stable and/or increasing population trend for the Indiana bat through protection and proactive management of Indiana Bat Primary and Secondary Conservation Areas. (See Management Prescription Area 8E4)

OBJ SPD-9: Maintain a stable and/or increasing population trend for the Cow Knob salamander over the planning period through protection and maintenance of the Cow Knob Salamander Habitat Conservation Area. (See Management Prescription Area 8E7)

OBJ SPD-10: Maintain or increase populations/occurrences of northeastern bulrush, swamp pink, Virginia sneezeweed, shale barren rockcress, and smooth coneflower through protection and maintenance of existing sites. (See Management Prescription Area 4D)

OBJ SPD-11: Maintain stable and/or increasing population trends for all Management Indicator Species.

OBJ SPD-12: Maintain about 400-600 acres of wildlife grassland openings through mechanical means, maintain wildlife improvements through burning on about 800 acres, improve conditions on about 100-200 acres of wildlife openings and old fields, and create about 20-30 acres of new temporary openings per year to meet structural diversity needs for migratory birds and other species.

OBJ SPD-13: Manage 900-1,500 acres of early successional habitat per decade using practices designed to emphasize habitat for ruffed grouse and American woodcock.

OBJ SPD-14: Existing grazing allotment plans will be revised over the next 10 years to address habitat conditions.

NON-NATIVE AND NATIVE INVASIVE SPECIES

Management Approach

Management of all non-native invasive species will focus on four components: 1) prevention of new infestations; 2) elimination of new infestations before they become established; 3) containment or reduction of established infestations; and 4) reclamation of native habitats and ecosystems. Integrated pest management approaches will be used in all four of these components. Monitoring of new and existing infestations is an important part of the monitoring strategy (Chapter 5). Since non-native invasive species are a problem on all lands, a key component of the management strategy is coordination and cooperation with other federal, state, and local agencies and local interest groups. The Forest will contribute, whenever possible, to research aimed at suppression of hemlock woolly adelgid, beech bark disease, dogwood anthracnose and other introduced significant non-native invasive pest problems. The GWNF will actively participate with other groups in developing and implementing control strategies. Education of forest users, particularly in high use areas will be another component of the management strategy.

Non-Native Invasive Plants (NNIP). Given the current known distribution of non-native invasive plants (NNIP) on the George Washington National Forest, there is a need to implement an integrated program of NNIP control to protect forest resources and reduce the potential to spread from Forest lands to adjacent private or public lands. New infestations and new NNIP species are likely to occur during the life of the Plan but a list of priority species for treatment will be maintained on the Forest. Prevention of new infestations is important, as is control of existing infestations. Before management activities take place it is important to identify potential NNIP threats and develop a control/eradication plan that includes follow up monitoring of any NNIP treatments for effectiveness. High priority treatment areas for NNIP are:

- Locations with threatened, endangered or sensitive plant species;
- Special Biological Areas/rare communities
- Research Natural Areas
- Hot spots of NNIP infestation
- Infestations of new NNIP species
- Areas disturbed by fire, insect, disease or storm damage
- Designated Wilderness
- Recommended Wilderness Study Areas
- Roadsides and parking areas
- Trails and trailheads
- Riparian areas
- Wildlife openings
- Other disturbed areas

Gypsy Moth (*Lymantria dispar* (L.)) is a non-native insect defoliator that favors many deciduous tree species, primarily oak. The abundance of oak species throughout the forest makes the George Washington National Forest prime habitat for the gypsy moth. The mature and overmature state of these oak forests over a vast majority of the Forest results in high probabilities of severe mortality and loss of hard mast production over time. Gypsy moth suppression priorities are:

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

Hemlock Woolly Adelgid (*Adelges tsugae*) is a non-native aphid-like insect that infests hemlock trees. The insect feeds on the sap of the tree at the base of the hemlock needles. Infested trees decline over a few years and eventually die. Most of the Forest is generally infested and severe mortality has already occurred in most of the hemlock stands found predominantly along our creeks and streams on the GWNF. Although there is little to do to prevent further mortality, opportunities to mitigate the loss of the hemlocks in the riparian ecological system will be explored.

Emerald Ash Borer (*Agrilus planipennis*) is a non-native borer that attacks ash species. This recently introduced pest is not yet known to occur on the Forest; however, it has been identified in other areas of Virginia and West Virginia. The insect can cause severe mortality of ash. Although this Forest does not have a large ash component, this insect pest is still of great management concern due to uncertainty of the extent of mortality this pest could cause (e.g. elimination of all ash from our ecosystems).

White-Nose Syndrome (WNS). WNS is a fungus caused disease that was first seen in New York caves during the winter of 2006-2007. The newly discovered, cold-loving fungus (*Geomyces destructans*) has spread south during the past several years and was first confirmed in Virginia and West Virginia during the winter of 2008-2009 with additional spread and caves contaminated in 2009-2010. To date well over one million bats have been killed by this fungus which irritates bats during hibernation causing them to wake and use precious fat reserves. The bats then starve and or freeze when they attempt to fly and leave the cave in search of food during the midst of winter conditions. Important caves used as hibernacula by endangered bats have been gated and locked. Additionally, all caves and mines on the Forest are currently closed per Regional Forest order to halt human disturbance of bats and prevent spread of fungal spores on clothing, boots, and equipment.

Southern Pine Beetle (*Dendroctonus frontalis*) is a native bark boring insect that attacks primarily yellow pines (shortleaf, pitch, table mountain, and Virginia pines on this Forest). However, it can also infest white pine and even red spruce. Although a native insect, populations can reach outbreak proportions causing undesirable widespread mortality in pine ecosystems. Priorities for reducing or eliminating potential losses from Southern pine beetle are:

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

Didymo (*Didymosphenia geminata*) is a freshwater diatom (type of alga) that can form massive blooms on the bottoms of streams and rivers where it attaches itself to the streambed by stalks. These stalks can form a thick brown mat that covers rocks, submerged plants and other materials. The GWNF will actively participate with other groups in developing and implementing control strategies. Education of forest users, particularly in high use areas will be another component of the management strategy.

Objectives for Non-Native and Native Invasive Species

OBJ NNI-1: Survey 5,000 to 10,000 acres for non-native invasive plants annually.

OBJ NNI-2: Treat 2,000 to 5,000 acres of non-native invasive plants annually.

CLIMATE CHANGE

Management Approach

We have historically experienced droughts, flooding, extreme weather events, catastrophic fire, insects and diseases, and to a more gradual degree, movement in the ranges of flora and fauna. Many of our current management strategies already strive to maintain or enhance the health and resiliency of various forest resources to better withstand environmental stresses and human-induced pressures. However, the effects of an accelerated rate of change and an increase in the intensity of these impacts on forest resources and ecosystems are still largely unknown and unpredictable. Climate change effects are multiple, varied, and interact with many other stressors/variables. Therefore, an adaptive management approach that monitors forest resource conditions, and incorporates the current state of scientific knowledge related to responses to climate change, is needed that will allow us to proactively adjust current strategies or adopt new strategies as needed.

Climate change strategies for the George Washington National Forest focus 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 strategies 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 engaging in partnerships across landscapes and ownerships.

Reduce Vulnerability and Restore Resilient Native Ecosystems. A primary focus of the Forest Plan is an emphasis on ecosystem resiliency that will support ecological systems diversity and species viability now and in the future. Maintaining and restoring healthy ecosystems that can tolerate, or appropriately adapt to, changes in environmental and social conditions are our best strategy for preparing for potential changes from unusual climate variations. Management strategies to maintain and restore resilient native ecosystems include:

- Identify desired conditions and objectives to maintain the resilience and function of nine identified ecological systems and determine the desired disturbance regimes, including fire, for those ecosystems.
- Increase the use of wildland fire as a tool for achieving resource management desired conditions.
- Maintain or restore ecological conditions that are rare on the forest, such as spruce, high elevation early successional habitat, open woodlands, old fields, rare communities, and Special Biological Areas.
- Manage the forest to maintain connections of forested landscapes to facilitate movement of species that may need to move or migrate for populations to remain viable.
- Manage the forest to maintain remote settings in areas identified as high priorities for providing core reserves.
- Identify land acquisition and exchange priorities that include high elevation habitats or connectivity corridors.

Watershed Health. Specific management strategies the George Washington National Forest will use to address the management and conservation of terrestrial and aquatic resources in light of predicted effects from climate change are:

- Protect and restore beaver meadows, wetlands, and floodplains to improve natural water storage, reduce flood hazards, and prolong seasonal flows. Beaver ponds and wetlands recharge groundwater, raise the water table, retain sediment and organic matter, store water during floods and release it slowly, mitigate low flows and drought, reduce carbon turnover rate, raise pH and ANC, while reducing SO₂, Al, and NO₃.

- Protect and restore riparian forests to moderate changes in stream temperature, maintain stream bank stability, and provide instream habitat, particularly in key native brook trout streams.
- Remove migration barriers and re-establish habitat connectivity so that species can move to more suitable habitat, or move to or from refugia, particularly in systems supporting native brook trout.
- Improve or decommission roads to reduce adverse impacts during large storms to prevent surface erosion and fill slope failure and landslides. Construct stream crossings and bridges to withstand major storm and runoff events.
- Include standards to assess geologic hazards from management activities, including potential landslide hazards and risks, particularly as the population and infrastructure continue to increase in areas adjacent to the Forest.
- Revegetate bare soil as soon as possible. Suspend or eliminate recreation uses that are causing elevated sediment levels to streams or large areas of long-term loss of soil productivity outside the designated use area.
- Riparian corridor widths are expanded and standards included for protecting channeled ephemeral streams.
- Consider nutrient replacement when planning vegetative management and/or look for alternative solutions (such as watershed liming or fertilization) in acid-sensitive watersheds.
- Identify soils highly sensitive to acid deposition and nutrient loss. Do not allow unlimited small diameter utilization in those areas and consider possible soil fertilization treatments.
- Relocate, close or decommission roads causing significant resource damage.

Carbon Sequestration. National Forest System lands have opportunities for 1) biomass sequestration and storage of CO₂, and 2) geologic sequestration and storage of CO₂.

Biomass sequestration: Sustainable forestry practices 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 are some of the ways to increase forest carbon in the long run. The most defensible options for managing forests for their carbon storage are keeping forests as forests, reforesting areas where forests historically occurred, using forest biomass to offset fossil-fuel use (burning forest biomass generally means that fossil fuel will not be burned), and promoting long-lived forest products such as wood-framed buildings. Forests (particularly older forests) generally store carbon better than forest products, so harvesting old-growth forests for their forest products is not an effective carbon conservation strategy (Harmon et al. 1990). However, harvest and regeneration of young to middle-aged forests for long-lived forest products can help with carbon storage (Ryan 2008). The Plan provides for a diversity of ages and structure in the forest to provide multiple strategies for addressing carbon storage.

Geologic Sequestration: In May 2009, the U.S. Department of Energy released a comprehensive study of geologic carbon sequestration and storage (CSS) on federal lands in "Storage of Captured Carbon Dioxide Beneath Federal Lands", (National Energy Technology Laboratory, 2009). This report characterizes and estimates the geologic storage potential as well as regulatory issues on all federal lands. The FS and BLM are the two agencies with the lion's share of opportunity for geologic CSS. At the current time, it is not possible to assess what role geologic CCS may play on federal land. However, an adaptive management approach may evaluate this opportunity in the future.

Existing Stresses. 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 fragmented land ownership patterns, success in reducing invasive species will often require going beyond 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. Management strategies for mitigating existing stresses are:

- Southern pine beetle infestations should be quickly addressed. Silvicultural options for decreasing the vulnerability of attack could include thinning and/or low intensity fire to lower basal areas.
- Aggressive treatment of highly invasive non-native invasive plant and animal species.

Alternative Energy Demands. Environmental effects of wind energy development, such as impacts to bats and birds and visual quality, have not been evaluated on the Forest. The Forest Plan has identified areas where wind development would not be compatible with management of other resources. There are opportunities to evaluate potential wind development on some suitable ridges of the GWNF. Evaluation of wind development will occur on a project-specific basis after a specific request is submitted to the Forest.

Sustainable Operations and Partnerships. The Forest will work with the state of Virginia to incorporate the data on 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 Potomac Watershed Partnership, Appalachian Mountains Joint Venture, Eastern Brook Trout Joint Venture, and USFWS Landscape Conservation Cooperatives Initiative.

RESTORATION

Management Approach

Restoration has already been discussed under several other sections. Restoration activities expected to occur include:

- Maintaining connections of forested landscapes.
- Improving connectivity of stream systems through replacement of standard culverts with crossing structures that allow for full passage of all aquatic organisms.
- Controlling sources of erosion and sedimentation and restoring stream channels to fully functional levels.
- Road decommissioning in areas where roads are causing unacceptable resource damage.
- Encouraging active populations of beaver to facilitate wetland creation.
- Planting American chestnut seedlings in partnership with several chestnut organizations.
- Managing fire to restore fire-dependent pines like table mountain pine and shortleaf pine.
- Expanding the Spruce Forest ecological system to its full extent in the Laurel Fork area.
- Creating and maintaining high elevation grasslands and old fields.
- Using fire and timber harvest to restore vegetation composition and structure, particularly in the Pine Forest and Oak Forest and Woodland systems.
- Controlling the introduction and spread of non-native invasive species.
- Improving wetlands through removing drainage structures and ditches in old agricultural lands.
- Enhancing bottomland hardwoods in the few major floodplains on the GWNF.
- Retention of riparian buffers in the riparian corridor.
- Maintaining and improving habitat for mussels.
- Maintaining and improving habitat for rare community species.
- Maintaining the processes that allow for oak reproduction.
- Managing for warm season grasslands.
- Converting pine plantations to native pines and hardwoods.
- Closing abandoned mine lands and restoring native vegetation.
- Identifying priority watersheds for focusing restoration needs.
- Liming of streams that have high acidity levels.

FIRE

Management Approach

Wildland fires are categorized into two distinct types of fire: 1) wildfires are unplanned ignitions or prescribed fires that are declared wildfires; 2) prescribed fires are planned ignitions. Wildfires are managed according to the Federal Wildland Fire Management Policy (latest is February 2009). Our strategy for responding to wildfires is based on the ecological, social, and legal consequences of the fire. The circumstances under which the fire occurs and the likely effects on firefighter and public safety dictate the appropriate management response. All unplanned wildfires are assessed and managed following processes like the Wildland Fire Decision Support System (WFDSS) process that examines the appropriate range of responses.

The number of acres treated each year by prescribed burning varies based on factors such as weather conditions, fuel conditions, budget, and available resources (staffing). Changes in any of these factors or unexpected events can sometimes dramatically affect the acreage burned forestwide from year to year. Based on anticipated funding levels and capacity, it is projected that approximately 12,000 – 20,000 acres will likely be prescribed burned annually across the GWNF, with increases in the number of acres burned possible with favorable weather conditions, additional agency capacity, or opportunities for joint efforts with State programs, partners, or other cooperative opportunities such as the Fire Learning Network. When these opportunities occur, our strategy is to take advantage of these occasions to accelerate ecosystem restoration and make improvements toward desired conditions.

Conditions for managing fire can be unpredictable; however, where necessary to control erosion, we will generally install water diversions on firelines during their construction and revegetate firelines after suppression.

Timber, ecological, wildlife and prescribed fire objectives will be closely coordinated. For example, it may be undesirable to burn regenerated areas when the desired residual tree species cannot withstand the effects of fire with minimal degradation. Areas should not undergo prescribed burning for at least 30 days after herbicide treatment.

Objectives for Fire

OBJ FRE-1: Where fire regimes have been moderately (Condition Class 2) or significantly (Condition Class 3) altered from their historic range, 120,000 to 200,000 acres per decade are prescribed burned to move these acres toward a Condition Class 1. Fire regimes in Fire Condition Class 1 areas are within historical ranges.

OBJ FRE-2: To increase or maintain structural diversity in Oak Forests and Woodlands and Pine Forests and Woodlands, 12,000 to 20,000 acres of prescribed burning annually are implemented.

OBJ FRE-3: Demonstrate conformity with the State Implementation Plan for any prescribed fire planned within EPA-designated “non-attainment” and “maintenance” areas.

OBJ FRE-4: Protection of firefighter and public safety is the most important objective during wildland fire management activities. Once firefighters have been assigned to a wildland fire, their safety becomes the highest value to be protected.

RECREATION

Management Approach

The Forest’s primary emphasis for the developed recreation program on the GWNF is to continue providing the full spectrum of opportunities, ranging from minimally to highly developed facilities in a financially and environmentally sustainable manner.

During the initial years of this plan, the focus will be on utilizing a collaborative approach to plan and implement an alignment of recreation facilities/services with demand and financial and environmental sustainability. A key part of this strategy will be to seek long-term funding and establish additional partnerships to reduce facility maintenance backlogs and add desired facilities that meet increasing recreation demands.

A similar management strategy is anticipated for dispersed recreation. The focus will be on improving trail conditions and long-term sustainability. Much of the focus on trails is expected to target high-use areas near population centers. This work is expected to emphasize bringing existing trails up to sustainable standards through redesign and reconstruction as necessary. New trail construction will be evaluated as opportunities arise, with emphasis on loop trails. The possibilities of utilizing decommissioned roads for trails will be examined. Programs for achieving technically challenging trail maintenance, resources protection, user education, and various inventory and monitoring activities will be achieved primarily through partnerships with various organizations, such as the Appalachian Trail Conservancy, Appalachian Trail clubs, universities and others, to the extent funding allows. Proposals for new trails, trail expansions, or projects that would change the maintenance level or design use of existing trails, or that include installing a new or replacing an existing trail bridge, would be reviewed using a process such as or similar to the national forest's Excellence by Design process.

Where information boards are provided at trailheads used to access backcountry areas, priority consideration is given to appropriate orientation, resource protection and public safety messages. Examples include but are not limited to a trail(s) map, address and/or latitude and longitude for the trailhead, phone numbers and locations for nearest law enforcement agency and emergency medical services, Leave No Trace principles, group size limits (where applicable), Safety Tips, Camping in Bear Country, Hazard Trees and similar messages.

The mileage of roads maintained for high clearance vehicles (OHV) is estimated to be about 1,000 miles across the Forest, near current levels.

A majority of the areas that provide Semi-primitive Non-Motorized (SPNM) recreation opportunities will be maintained by the use of management prescription areas that restrict road construction and timber harvest. These prescription areas are allocated to 85 – 90% of the currently inventoried SPNM areas.

For Semi-Primitive Motorized (SPM) areas, the objective is to maintain at least 85% of the inventoried areas as SPM. New permanent road construction within semi-primitive motorized areas will generally be limited to roads that are closed after the immediate resource access need is met. Road restoration and maintenance is generally limited to that necessary to protect soil, water, and biological resources. Road restoration is done in such a manner as to maintain the unimproved nature of the road. Temporary road construction within semi-primitive motorized and non-motorized areas is allowed since temporary roads are closed and revegetated following the use.

Objectives for Recreation

OBJ REC-1: Provide approximately 170,000 - 200,000 acres of Semi-Primitive Non-Motorized (SPNM), 180,000 – 210,000 acres of Semi-Primitive Motorized (SPM), and 650,000 – 710,000 acres of Roaded Natural (RN) recreational opportunities across the Forest.

OBJ REC-2: Provide approximately 1,000 to 1,100 miles of non-motorized trails. Manage the extent, location, and level of cooperative maintenance of system trails to improve sustainability and avoid any net increase in trail maintenance costs.

OBJ REC-3: Provide a total of 60-75 miles of motorized trail within the Management Prescription Area 7C (All-Terrain Vehicle Use Areas).

OBJ REC-4: For the Appalachian National Scenic Trail, the remaining Priority 1 and 2 tracts are acquired over the next decade.

OBJ REC-5: Agreements for Voluntary Services are in place and up-to-date for all sponsored groups and individual volunteers, including but not limited to trail maintaining organizations, campground hosts, interpreters, photographers, visitor use surveyors, etc. For sponsored volunteer groups, the agreements

include an annual program of work which will be reviewed by staff specialists to prevent conflicts with other resources.

OBJ REC-6: Provide at least 244 miles of open or seasonally open roads as high clearance roads which will emphasize scenic touring by off highway vehicles.

LANDSCAPE AND SCENERY

Management Approach

The Scenery Treatment Guide for the Southern Region (issued April 23, 2008) and the scenic integrity objectives (SIO) within the standards of the Plan will provide guidance for mitigating scenery impacts for management activities and should be incorporated into project planning and implementation.

Table 3-2. Relationship between New Scenery Management System (SMS) and Old Visual Management System (VMS)

SMS-Scenic Integrity Objective	Appearance	VMS-Visual Quality Objective
Very High	Unaltered	Preservation
High	Appears Unaltered	Retention
Moderate	Slightly Altered	Partial Retention
Low	Moderately Altered	Modification

The following guidelines in Table 3-3 offer a listing of management activities and various treatment clauses for use in meeting the desired conditions for scenery. The listing of management treatments and management activities is not all-inclusive. There are additional treatments provided as forestwide standards in Chapter 4—Design Criteria. The treatment guidelines should not be used to automatically determine which treatments should be applied. Each project may have unique conditions that need to be considered.

Table 3-3. Scenery Treatment Guide

Activity	Scenic Integrity Objective		
	High	Moderate	Low
Clearcut or Overstory Removal	N/A	B,C,D,F,G,H,M,N,U,V,X	L,O,U,V
Shelterwood	A,B,C,D,F,G,H,J,M,N,P,U,V	A,B,C,D,F,H,M,N,P,U,V,Y	B,L,M,P,U,V
Shelterwood with Reserves	A,B,C,D,F,G,H,J,M,N,U,V	A,B,C,D,F,H,M,N,U,V,Y	B,L,M,U,V
Salvage	A,B,C,D,F,G,H,K,U,V	A,B,C,D,F,H,U,V,Y	B,L,U,V
Uneven-age System	A,B,C,D,F,G,H,I	A,B,C,D,F,G,H,I	I
Any Thinning	A,B,C,D,F,G,H	A,B,C,D,F,G,H	A,B
Maintaining Roadsides	A,B,E,G,S,T,W	A,B,E,S,T,W	A,E,S,T,W
Road Construction or Reconstruction	C,G,H,S,T,W	A,B,C,H,S,T,W	A,B,S,T,W
Temporary Road Construction	C,G,H,S,T,W	A,B,C,G,H,S,T,W	A,B,S,T,W
Utility or Energy Corridor Construction	A,B,C,D,E,G,H,Q,R	A,B,C,D,E,H,Q,R	B,H,Q,R
Prescribed Fire	G, Z, AA, AB, AC, AD	G, Z, AA, AB, AC, AD	G, AB, AC, AD
Utilities (electricity, gas, phone, water, sewer)	AE, AF, AG, AH	AE, AF, AG, AH	

- A. Trees should be selectively removed to improve scenery within high use areas, vista points, and along interpretive trails.
- B. Flowering and other visually attractive trees and understory shrubs should be favored when leaving vegetation.
- C. During temporary or permanent road construction, eliminate or remove from view, slash and root wads as viewed from the immediate foreground of High and Moderate SIO viewing platforms to the extent possible. Some slash may be aligned parallel to roads at the base of fill slopes to collect silt.
- D. Slash should be removed, burned, chipped or lopped to within an average of 2 feet of ground, when visible within 100-foot zone of concern level 1 and 2 travelways and use areas.
- E. Stems should be cut to within 6 inches of the ground when doing roadside maintenance or at utility crossings.
- F. Leave tree or unit marking should be applied so as to not be visible within 100 feet of concern level 1 and 2 viewing platforms*.
- G. Scheduling work outside of major recreation seasons should be considered on roads leading to recreation facilities.
- H. Special road and landing design should be used. When possible, log landings, roads and bladed skid trails should be located out of view to avoid bare mineral soil observation from concern level 2 viewing platforms*. (See also forestwide standards in Chapter 4 that address road, skid trail and landing design in concern level 1 travel routes.)
- I. An opening size should generally not exceed 1.5 acres.
- J. An actual opening size up to 10 acres could occur in the foreground zone and 25 acres in middleground and background zone visible from concern level 1 & 2 viewing platforms.
- K. An actual opening size up to 25 acres with inclusions could occur.
- L. An actual opening size up to 40 acres with inclusions could occur.
- M. Along concern level 1 and 2 travel routes, openings should be spaced at a minimum of 1000 feet apart next to the travel route.
- N. Along concern level 1 and 2 travel routes with a high SIO, openings of up to 200 feet could occur.
- O. Along concern level 2 travel routes with a moderate SIO, openings of up to 400 feet could occur.

- P. Removal of overstory should be delayed until understory is 10 feet in height.
- Q. Utility rights-of-ways should be located to conform to natural patterns of vegetation.
- R. Overhead utility lines and support towers should be screened where possible.
- S. The visual impression of roads should be blended so that they remain subordinate to the existing landscape character in size, form, line, color, and texture.
- T. Gravel pits and borrow areas should be excluded from seen area of visually sensitive travelways and viewing points.
- U. No adjacent regeneration cutting should occur until dominant and codominant species reach 20 percent of height of tallest adjacent stands for even-aged timber harvest cutting methods.
- V. Openings should be shaped and oriented to contours and existing vegetation patterns to blend with existing landscape characteristics. Edges should be shaped and/or feathered where appropriate. No geometric shapes should be used.
- W. Cut and fill slopes should be revegetated.
- X. An actual opening size up to 10 acres could occur in the near foreground zone (within approximately 1,000' of viewing platform*), 25 acres in remainder of foreground zone (approximately 1,000' to ½ mile), and 40 acres in middleground and background zone as viewed from concern level 1 & 2 viewing platforms*.
- Y. An actual opening size up to 40 acres could occur.
- Z. For areas visible in the Foreground and Middleground Zones from Sensitivity Level 1 and Level 2 viewing platform(s)*, there should be visual diversity and visual links to surrounding forested landscape (mosaic of openings) following the use of prescribed fire.
- AA. For areas visible in the Foreground Zone (up to ½ mile) from Sensitivity Level 1 viewing platforms*, and the immediate Foreground (300 feet) from Sensitivity Level 2 viewing platforms, the perimeter of the burned area should appear random and natural, not controlled. Visual impacts of constructed line would be mitigated.
- AB. For areas visible in the immediate Foreground Zone (300 feet) from Sensitivity Level 1 and 2 viewing platforms*, minimize permanent scarring or damage to important scenic features.
- AC. Protect recreation infrastructure including minor constructed features (like trail signs, information boards, etc.) from scarring and damage.
- AD. Minimize the visual impact of linear corridors created by fire lines.
- AE. Crossing of forest roads and trails by utility corridors should be at right angles whenever possible. Structures associated with the utility should be set as far back from the crossing as possible. To minimize the duration of view by users of the forest road or trail, the utility corridor and its structures should be screened by vegetation to the maximum extent feasible.
- AF. Structures, cables, wires, pipes and other materials associated with utilities that will be above ground should be non-reflective and treated or painted to blend with the natural environment to the fullest extent possible.
- AG. Utilities should be co-located whenever possible to reduce visual impacts.
- AH. Follow natural topographic lines to reduce the visual impact of structures, soil disturbance and vegetation removal. Consider an alignment that locates utilities behind landforms when otherwise visible from sensitivity level 1 and 2 viewing platforms*. Consider an alignment that locates utilities low enough along natural topographic lines that their structures do not visually break into the skyline when viewed from sensitivity level 1 and 2 viewing platforms.

*Viewing platforms are areas where people routinely view landscapes. They include but may not be limited to roads, roadside pullouts, parking areas, trails, rivers, lakes, developed recreation sites, known dispersed campsites, visitor centers, and residential areas. Due to intervening landforms, rock outcrops, and vegetation, not all of the landscape within the foreground, middleground and background distance zones is visible.

Objectives for Scenery

OBJ SCE-1: Manage the George Washington National Forest with the following Scenic Integrity Objectives (acres are approximate): Very High 45,000 acres; High 424,000 acres; Moderate 579,000 acres; and Low 17,000 acres.

CULTURAL RESOURCES

Management Approach

Significant cultural resources are protected from loss. Our overall strategy for sustaining the cultural resources, which are a desirable part of the setting and character of the GWNF, involves continuing to identify significant sites and stabilizing them, taking appropriate measures and employing current treatments needed to protect them from damage, and preserving them for future scientific research and interpretation opportunities. Surveys are conducted prior to site disturbance activities. Visitors have opportunities to learn about the past and how to protect cultural resources through on and off-site interpretation and hands-on programs such as Passport in Time. Partnerships and agreements with State Historic Preservation Offices and universities play an important role in helping to achieve desired conditions.

Cultural resources are managed through a process of identification, evaluation, and allocation to appropriate management categories (preservation, enhancement, scientific investigation, or release from management under the National Historic Preservation Act) that protect cultural resource values and benefit the public. A Heritage Program Plan for the George Washington National Forest is complete and implemented. Historic Property Plans are completed and implemented for highly significant cultural sites, particularly Priority Heritage Assets.

ROADS, ACCESS AND FACILITIES

Management Approach

The main priorities for managing the roads and facilities that make up the GWNF infrastructure are on safety and maintenance of existing systems. This includes backlogged repairs and upgrades; improvements for environmental protection; disposal of facilities that are no longer needed or that are not financially or environmentally sustainable; and rehabilitation of user-created trails, roads and parking areas. Infrastructure additions are anticipated to be limited and dependent on funding availability.

The road system needed to manage the GWNF has been identified through the Transportation Analysis Process (TAP). While new roads will be needed for future access to manage the Forest, there will be a net decrease in the road mileage over the next ten to fifteen years. Decisions on roads to be decommissioned will be made on a project-level basis based on appropriate site-specific environmental analysis and disclosure to assure compliance with the NEPA. These decisions will be based on the need for the road to meet resource and recreation objectives and the environmental risks of maintaining the road (including the location of the road in priority watersheds).

Maintenance priorities for roads will include bridge safety, adequate signs, suitable stream crossings, and any resurfacing or reconstruction needed to provide an overall road system that is useable and safe for motorized vehicle use. Unauthorized travelways will either be decommissioned or left to naturally re-vegetate.

The facilities program includes construction and maintenance of a variety of structures and associated utilities across the Forest that are used for recreation, administration, maintenance, storage, and other general management purposes. Program priorities for the future will be directed toward: (1) reducing the backlog of facility deferred maintenance, particularly those items associated with health and safety; (2) right-sizing the facility inventory to match current management needs, including decommissioning and disposing of those facilities which are no longer required to support management or recreation objectives or that are not financially or environmentally sustainable; (3) reducing the operating and maintenance costs associated with the facility portfolio; and (4) providing limited new facilities to support priority programs and areas.

New facility construction in the future is expected to be limited to improvements and expansions of existing facilities. Compliance with applicable accessibility requirements will continue to be a priority.

Objectives for Roads, Access and Facilities

OBJ RDS-1: No net increase in the current miles of open roads on the forest.

OBJ RDS-2: Over the next 10 years, 100 to 200 miles of roads (classified and unauthorized) are decommissioned. Priorities for decommissioning are roads causing resource damage and roads in priority watersheds.

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

OBJ RDS-4: Conduct condition surveys on at least 25% of passenger car roads (OML 3-5) per year. Annually survey a representative sample of high clearance vehicle roads (OML 1-2) to provide for a forestwide indication of OML 1-2 road conditions.

OBJ RDS-5: Over the next decade, turn over a portion of the 107 miles of forest development roads where the majority of traffic is not related to Forest use to the State Department of Transportation.

LANDS AND SPECIAL USES

Management Approach

The lands and special uses program manages the real estate-related activities associated with GWNF lands. The overall direction for the program is on consolidating these lands through acquisitions and exchanges while providing appropriate access to Federal property for public services and other special uses. For land ownership adjustments, this typically focuses on land parcels within or adjacent to Forest Service boundaries; however, isolated tracts that have special values or contribute to the mission of the Forest Service are also included in our goals.

Following the early land acquisition period during the mid-1930s to early 1940s when the bulk of lands for the GWNF were purchased, the land adjustment program has historically been pursued as a small scale program of tract-by-tract land acquisition and disposal actions to improve consolidation of land ownership. Due to the occasional nature of land acquisition opportunities, it is difficult to predict likely land ownership adjustments in future years, but a generally low level of program activity is expected to continue into the near term. Main concerns for consolidating and expanding land holdings include acquiring high-value ecosystems, threatened, endangered and sensitive species habitat, critical water corridors, and desirable adjoining or private inholdings.

Our program strategy for continued land ownership adjustments is to give priority to the following situations:

- Priority tracts for the Appalachian National Scenic Trail.
- Tracts which help consolidate large blocks of existing Forest lands (as opposed to adding onto small or isolated blocks).
- Acquisitions that protect resource values on adjacent Forest land.
- Acquisitions that contribute to the recovery of threatened, endangered or sensitive species or will aid in the protection of diverse species.
- Lands that enhance recreation, public access, and protection of aesthetic values, especially those that provide public access to waterways.
- Lands that are needed for the protection of important cultural resources.
- Acquisitions that will compliment a designated area such as a Wilderness.
- Lands needed for new administrative or recreational sites and/or protection of existing improvements.
- Other environmentally sensitive lands such as tracts containing unusual geographic features, wetlands or floodplains, rare plant or animal communities, or other attributes of uncommon or striking character.

New land acquisitions should generally be managed according to the adjacent or surrounding area's Forest Plan direction.

Special use authorizations provide for those private uses of Forest lands that are necessary to serve the public interest and which cannot be accommodated on non-Federal land. This includes Forest lands used for utility corridors and transmission lines, communication sites, military training activities, and special events. Our management approach for maintaining desired conditions on the GWNF is to continue to include and enforce appropriate environmental protection controls in leases, easements, right-of-way grants, licenses, and other special use permits. Special uses should be located where they minimize the need for additional designated sites and best serve their intended purpose. Co-locating special uses on land is preferred, when feasible.

Objective for Land and Special Uses

OBJ LAN-1: Survey and maintain to standard about 100-150 miles per year of boundary lines.

TIMBER MANAGEMENT

Management Approach

The timber sale program and commercial timber sales are used as a valuable tool to achieve other multiple resource objectives in conjunction with providing wood and fiber for society. Multiple use objectives that may benefit from timber management are primarily those described in the Ecological Systems Diversity and Restoration sections of this Chapter. Commercial timber sales often provide the most cost effective method for creating early successional habitat, open woodland settings, and forest structural diversity. The timber sale program will also help maintain processes that allow for oak reproduction and may be used in the conversion of pine plantations to native pines and hardwood forests. A dual purpose of the timber management program is to provide a stable supply of wood products for local needs. The timber program may also provide supplies of those wood products where the Forest Service is in a unique position to make an impact on meeting the demand from emerging markets such as wood biomass energy.

A wide variety of even-aged, two-aged, and uneven-aged silvicultural systems and harvest methods are provided for in order to provide adequate flexibility to respond to the specific need for vegetation manipulation in a given area or situation. However, it is envisioned that two-aged systems, mainly shelterwood with reserves (previously known as "modified shelterwoods"), will be the primary harvest system utilized to achieve multiple use objectives and provide for a variety of wood products. The residual density of these regenerated stands may vary quite a bit, from roughly 15 to 40 square feet of basal area for instance, in order to achieve the objective at hand. Intermediate harvests such as pre-commercial and commercial thinning will also be utilized to enhance species composition to benefit wildlife, forest health, and/or commercial values, as well as to enhance growth rates, form and vigor of the residual trees. However, thinning and conventional shelterwood cuts should be deferred in areas where gypsy moth populations are increasing to, or are at, damaging levels (>1,400 egg masses per acre), so as to avoid compounding stresses resulting from harvest and defoliation thereby increasing the probability of significant mortality.

Wood biomass energy is become an emerging market in some areas of the Forest. The Forest Service realizes that developing and using renewable sources of energy are national goals and that woody biomass is a potential source of renewable energy and fuel. However, we do not envision the production of wood biomass energy to be a sole purpose and need of any commercial timber sale. Woody biomass utilization of smaller diameter trees not considered merchantable in traditional markets can also be used to facilitate forest restoration, increase the growth of higher-value trees and forest products, reduce forest fire risk, and support the removal of invasive species. Small scale local firewood vendors can play a significant role in economically achieving thinning objectives, especially in younger stands.

As defined in Appendix F-Glossary, woody biomass can include logging slash, limbs, tops, and small diameter trees that would typically be noncommercial. Woody biomass on the Forest will not include below ground

biomass, downed logs, or stumps. Review of scientific literature suggests that substantial removal of tree branches and foliage that typically contribute to the nutrient pool can have negative effects on long-term soil productivity. Intensive removal of woody biomass may especially cause nutrient depletion on sensitive sites such as those with shallow, coarse textured soils. Woody biomass utilization will be limited on soils identified as high risk for soil acidification and nutrient depletion due to atmospheric deposition. High risk soils are determined by using atmospheric deposition, elevation and geologic data as well as vegetation and soils information. Less woody biomass needs to remain on sites with existing large quantities of woody biomass on the ground or on sites where the harvest intensity is low. The following graph illustrates the approach we will follow in woody biomass utilization. The amount of woody biomass left on site will vary according to the productivity of the site, the amount of existing down woody debris on the site, and the intensity of the harvest. However, at least 30 percent of all logging slash will be retained on all regeneration sites. On poorer sites, like site index 50, about 60 percent of the logging slash will be retained. These guidelines were developed by the Forest Guild Southeast Biomass Working Group, 2012.

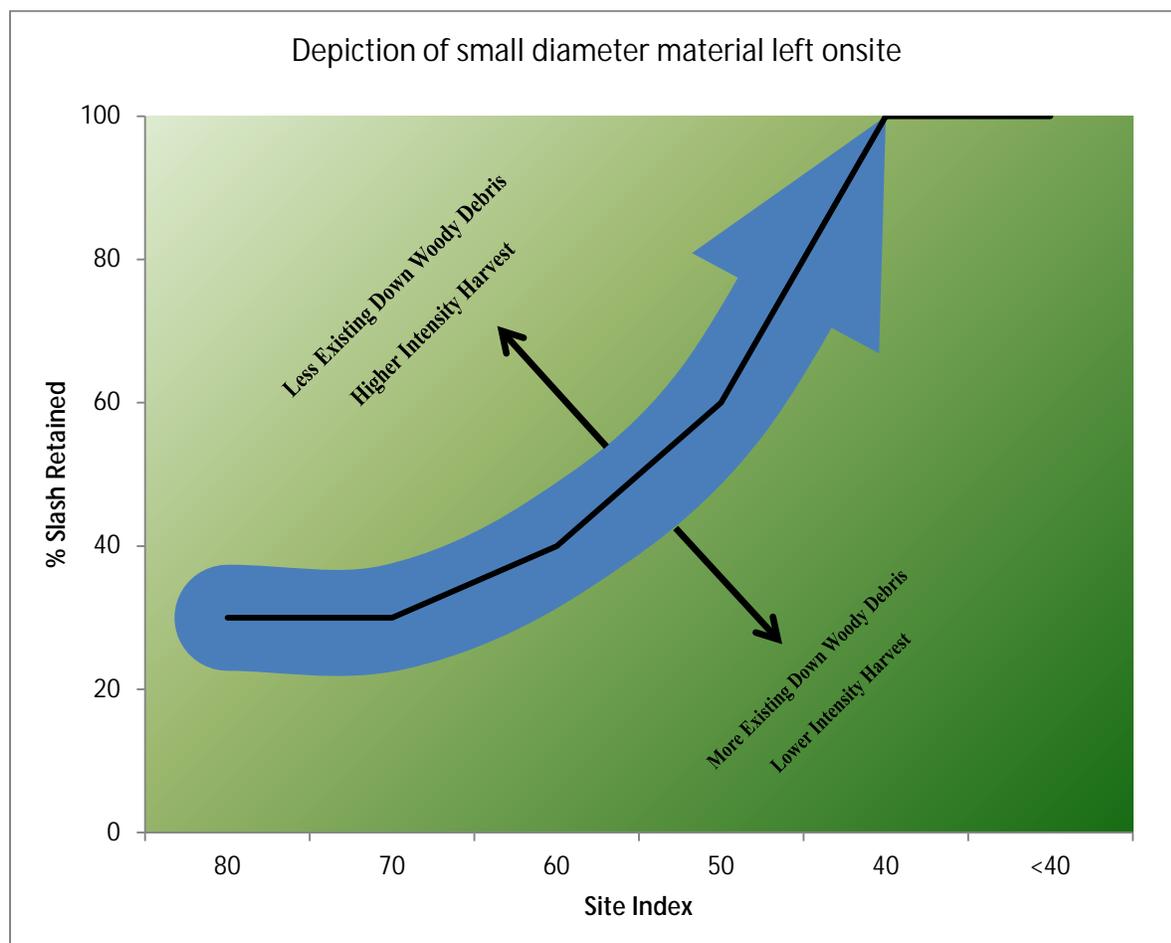


Figure 3-1. Slash Retention Guide for Regeneration Harvests

Objectives for Timber Management

OBJ TIM-1: A total timber sale program quantity (TSPQ) of 3.8 to 5.5 million cubic feet (MMCF) [19 to 27 million board feet (MMBF)] is provided annually from lands suitable for timber production. This equates to about 1,800 to 3,000 acres per year. The maximum Allowable Sale Quantity (ASQ) for the first decade is 55.3 MMCF.

OBJ TIM-2: Provide around 5,500 hundred cubic feet (CCF) of fuelwood available for personal use annually.

MINERAL RESOURCES

Management Approach

Energy-related Federal leases, licenses, and permits will be processed expeditiously, per Forest Service and Bureau of Land Management guidelines. Energy-related outstanding and reserved mineral rights operations will also be processed promptly. For non-energy mineral resources, emphasize authorizations of minerals needed for environmental protection, public infrastructure, flood protection, erosion control, and watershed restoration. Reclaim energy and non-energy mineral sites at the appropriate stage of the mineral operation. Identify opportunities for reclamation to achieve post-mine land uses that complement the desired conditions of the appropriate management prescription.

At the same time that the Forest Plan was completed, the GWNF also made the decision on which lands would be available for oil and gas leasing. This leasing availability decision, as described in the Record of Decision, makes National Forest System lands unavailable for federal oil and gas leasing. This decision does not affect existing oil and gas leases or privately owned oil and gas rights. Since this is a separate decision, new information could develop resulting in a new availability decision before the plan goes through another full revision. Therefore, this plan establishes a framework to guide any future availability decisions by including direction on the suitability of areas for leasing under various conditions and standards to direct drilling activities.

Under the framework described above, the Plan includes standards to reduce or eliminate many of the potential resource impacts from hydraulic fracturing and horizontal drilling. Public water supply watersheds as identified by the Commonwealth of Virginia for North River, Dry River-Skidmore (and watershed upstream of Dry River), Pedlar River (and watershed upstream of Pedlar River), Smith Creek, North Fork of Shenandoah, North Fork Shenandoah-Cedar Creek, Jackson River, and Coles Run are not suitable for oil and gas leasing. Areas with special biological concerns are suitable for leasing but only with No Surface Occupancy stipulations to prevent impacts to the sensitive resources in these areas. Controlled Surface Use stipulations are used to restrict road construction in semi-primitive recreation settings. The direction for each management prescription area identifies the type of stipulation that applies to oil and gas leasing as a suitable use. Whether land within that prescription area could become available (and the stipulations that apply) depends upon the decision on lands administratively available and if other characteristics of the land apply (like the presence of public water supply watersheds, Cow Knob salamander populations, or semi-primitive recreation settings).

The following list identifies the areas of the Forest that are suitable or not suitable for leasing. The list below is hierarchical. For example, if a semi-primitive setting occurs in a public water supply watershed, it would be not suitable for leasing because it is in a public water supply watershed.

Legally Unavailable for Leasing:

- Designated Wilderness
- Mount Pleasant National Scenic Area

Not suitable for Leasing:

- Public Water Supply Watersheds, as defined by the State (and the watersheds upstream of the Dry River PWS and the Pedlar River PWS)
- Laurel Fork area
- Recommended Wilderness Study Areas
- Shenandoah Mountain Recommended National Scenic Area
- Indiana Bat Primary Cave Protection Areas
-

Suitable, with a No Surface Occupancy Stipulation:

- Special Biological Areas
- Shenandoah Crest (and other areas known to support Cow Knob salamanders)
- Key Natural Heritage Community Areas

- Appalachian National Scenic Trail corridor
- Cultural/Heritage Areas
- Indiana Bat Secondary Protection Areas
- Eligible Wild and Scenic River Corridors
- Research Natural Areas
- Remote Backcountry Areas, includes all Inventoried Roadless Areas

Suitable, with a Controlled Surface Use Stipulation:

- Highlands Scenic Tour Byway
- Scenic Corridors and Viewsheds
- Concentrated Recreation Areas
- Blue Ridge Parkway Corridor
- Riparian Areas and Corridors
- Semi-Primitive Motorized or Semi-Primitive Non-Motorized settings

Suitable, with Standard Lease Terms:

- Administrative Sites
- Communication Sites
- Utility Corridors
- All-Terrain Vehicles Use Areas
- Dispersed Recreation Areas
- Pastoral Landscape and Rangelands
- Mosaics of Habitat

In approving Surface Use Plans of Operation, the Forest Service will encourage operators to monitor any private wells located within 1,000 feet of gas wells drilled on the Forest. The Forest Service may also require the installation of monitoring wells on the Forest.

INVENTORIED ROADLESS AREAS

Management Approach

All of the Inventoried Roadless Areas (IRAs) that are not recommended for wilderness study have direction to maintain their roadless character and they will be managed consistent with the requirements of the 2001 Roadless Area Conservation Rule. Most of these IRAs are assigned to the Remote Backcountry Management Prescription Area. For the recommended National Scenic Area (NSA), direction will be dependent upon the authorizing legislation, but until designation any IRAs within the NSA will be managed consistent with the requirements of the 2001 RACR. Portions of IRAs that are in other management prescription areas are noted on the maps in Appendix I and have specific direction for management consistent with the requirements of the 2001 Roadless Area Conservation Rule.

OLD GROWTH

Management Approach

Existing, Possible and Future old growth will be identified as described in Appendix B of this Plan and in accordance with *Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region*. Currently, little existing old growth has been verified on the ground. However, the amount of Possible and Future old growth is large. Existing old growth, as it is identified, will be managed based on the old growth forest type and the representation of that type in the Existing, Possible and Future old growth inventories. In Northern Hardwood, Hemlock-Northern Hardwood, White Pine-Northern Hardwood, Spruce Northern Hardwood, Mixed Mesophytic, Hardwood Wetland Forests, Dry and Xeric Oak Forest, Xeric Pine and Pine-Oak Forest and Woodland, Eastern Riverfront, Rocky, Thin-Soil Conifer Woodland old growth forest types, any existing old growth will be unsuitable for timber production. In the Dry-Mesic Oak Forest and

Dry and Dry-Mesic Oak-Pine old growth forest types, any existing old growth, in areas suitable for timber production, will be evaluated during project analysis to determine its suitability for harvest. If, during project analysis, it can be demonstrated that an identified existing old growth patch does not contribute to the Forest old growth inventory, then the patch could be suitable for timber production and harvest of the patch could occur. The project analysis will include a discussion of the old growth characteristics found in the area, the effect of the action on these characteristics, and the effect the action will have on the contribution of the area to the Forest's old growth inventory.

Objectives for Old Growth

OBJ OLD-1: The following possible old growth (based on stand age criteria alone) acres of each community type are maintained in an old growth or late-successional condition by the end of the first decade to ensure the integrity of ecological function and to ensure old growth systems on the GWNF are sustainable.

Table 3-4. Possible Old Growth Acres Objective

Old Growth Forest Type Group	Current Acres	After First Decade Acres
1 - Northern Hardwood Forests	1,200	4,500
2a-Hemlock-North. Hardwood Subgroup	2,500	3,000
2b-White Pine-North. Hardwood Subgroup	700	1,700
2c-Spruce-North. Hardwood Subgroup	100	100
5 - Mixed Mesophytic Forests	5,100	7,900
10 - Hardwood Wetland Forests	0	0
21 - Dry-Mesic Oak Forests	151,300	204,800 – 207,200
22 - Dry and Xeric Oak Woodlands	300	500
24 - Xeric Pine & Pine-Oak Forests	66,500	101,800
25 - Dry & Dry-Mesic Oak-Pine Forests	16,800	35,600 - 36,200
28 - Eastern Riverfront Forests	6	25
TOTAL ACRES	244,506	362,925

SUITABLE USES OVERVIEW

Suitability (36 CFR 219.3, 219.14): The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices. In addition, the National Forest Management Act requires plans to identify lands that are not suitable for timber production.

National Forest System lands are suitable for a variety of multiple uses (36 CFR 219), including outdoor recreation, livestock grazing, timber harvest, wildlife habitat, Wilderness, energy resource development, mining activities, watershed restoration, and cultural and heritage interpretation, among others.

A plan must identify National Forest System lands as not suited (“unsuitable”) for a certain use under the following circumstances:

- 1) If law, regulation, or Executive Order prohibits that use.
- 2) If agency resource management directives prohibit the use.
- 3) If the use would result in substantial and permanent impairment of the productivity of the land or renewable resources.
- 4) If the use is incompatible with the desired conditions established for all or part of the plan area.

SUITABLE USES – KEY ACTIVITIES

The following table is a summary of some of the key suitable uses as defined by the management prescription area descriptions found in Chapter 4. However, it is strongly recommended that Chapter 4 be consulted for the complete understanding of management prescription area direction as some of the uses have certain restrictions or circumstances related to a suitable use within that management prescription area.

Table 3-5. Lands Suitable for Key Activities

Management Prescription Area		Timber Production	Timber Harvest for Other Resource Objective	Salvage	Permanent Road Construction	Temporary Road Construction
1A	Designated Wilderness	No	No	No	No	No
1B	Recommended Wilderness Study Areas	No	No	No	No	No
2C2	Eligible Scenic River Corridors	No	No	No	No	No
2C3	Eligible Recreation River Corridors	No	Yes	Yes	Yes	Yes
4A	Appalachian Trail Corridor	No	Limited	No	Limited	Limited
4B	Research Natural Areas	No	No	No	No	No
4C1	Geologic Areas	No	No	Limited	No	No
4D	Special Biological Areas	No	Limited	Limited	Limited	Limited
4D1	Key Natural Heritage Community Areas	No	Limited	Limited	Limited	Limited
4E	Cultural/Heritage Areas	No	Limited	Yes	Limited	No
4F	Mt Pleasant National Scenic Area	No	No	No	No	No
4FA	Shenandoah Mountain Recommended National Scenic Area	No	No	No	No	No
5A	Administrative Sites	No	Limited	Yes	Yes	Yes
5B	Communication Sites	No	Limited	Yes	Yes	Yes
5C	Utility Corridors	No	Limited	Yes	Yes	Yes
7A1	Highlands Scenic Tour Byway	Yes	Yes	Yes	Yes	Yes
7B	Scenic Corridor and Viewsheds	Limited	Yes	Yes	Yes	Yes

Management Prescription Area		Timber Production	Timber Harvest for Other Resource Objective	Salvage	Permanent Road Construction	Temporary Road Construction
7C	All-Terrain Vehicle Areas	Yes	Yes	Yes	Yes	Yes
7D	Concentrated Recreation Zones	No	Limited	Yes	Yes	Yes
7E1	Dispersed Recreation-Unsuitable for Timber Production	No	Yes	Yes	Yes	Yes
7E2	Dispersed Recreation-Suitable for Timber Production	Yes	Yes	Yes	Yes	Yes
7F	Blue Ridge Parkway Corridor	Limited	Yes	Yes	Yes	Yes
7G	Pastoral Landscapes and Rangelands	No	Yes	Yes	Yes	Yes
8E4a	Indiana Bat Primary Protection Areas	No	No	No	No	No
8E4b	Indiana Bat Secondary Protection Areas	Yes	Yes	Yes	Yes	Yes
8E7	Shenandoah Mtn Crest - Cow Knob Salamander	No	No	Limited	No	No
11	Riparian Areas and Corridors	Limited	Yes	Limited	Limited	Limited
12D	Remote Backcountry Areas	No	No	No	No	No
13	Mosaics of Habitat Areas	Yes	Yes	Yes	Yes	Yes

WIND ENERGY DEVELOPMENT (UTILITY-SCALE)

The following Management Prescription Areas are not suitable for consideration of wind energy development:

- Designated Wilderness (1A)
- Recommended Wilderness Study Areas (1B)
- Eligible Scenic River Corridors (2C2)
- Eligible Recreation River Corridors (2C3)
- Appalachian Trail Corridor (4A)
- Research Natural Areas (4B)
- Geologic Areas (4C1)
- Special Biological Areas (4D)
- Key Natural Heritage Community Areas (4D1)
- Cultural Areas (4E)
- Mount Pleasant National Scenic Area (4F)
- Shenandoah Mountain Recommended National Scenic Area (4FA)
- Scenic Corridors and Viewsheds (7B)
- Developed Recreation Areas (7D)
- Blue Ridge Parkway Scenic Corridor (7F)
- Indiana Bat Protection Areas (8E4a, 8E4b)
- Shenandoah Mountain Crest – Cow Knob Salamander Area (8E7)
- Remote Backcountry Areas (12D)

LANDS SUITABLE FOR TIMBER PRODUCTION

During forest land and resource management planning, the Forest Service is required to identify lands unsuited for timber production (16 USC 1604(k); 36 CFR 219.14). Timber production is defined as “the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of forest planning, timber production does not include the production of fuelwood or harvests from unsuitable lands.” (36 CFR 219.3, 1982 rule). This identification process involves three stages of analysis. Stage I analysis identifies lands tentatively suitable for timber production. Stage II analysis is designed to explore the financial aspect of varying intensities of timber management on lands identified as tentatively suitable for timber production from Stage I. Stage III analysis identifies the final set of lands as unsuited for timber as determined by the desired conditions and land allocations in the revised Forest Land and Resource Management Plan.

STAGE I: PHYSICAL SUITABILITY

The first stage of the timber suitability analysis addresses the administrative and physical suitability of the land to be managed for the production of timber. Stage I lands unsuitable for timber production include:

- Lands that do not meet the definition of forest land (land at least 10% occupied by forest trees of any size).
- Lands that have been administratively or congressionally withdrawn from timber production by an act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.
- Forest lands incapable of producing industrial wood.
- Lands where technology is not available to ensure timber production from the land without irreversible soil and water resource damage.

- Lands where there is no reasonable assurance that they can be adequately restocked.
- Lands where there is inadequate information.

Table 3-6 describes the information used to estimate the acreage within the six categories of the Stage I tentatively suitable lands. It is important to note that the net acres displayed in Table 3-7 refer to the acres within that particular category that have not already been removed in a previous category. For instance, there are a total of some 41,000 acres on the Forest that meet the criteria for 'Irreversible Damage and Can't Restock', but only about 29,000 are shown as removed because the other 12,000 acres were already removed by the 'Withdrawn' category.

Table 3-6. Tentatively Suitable Acres for Timber Production (Stage I Suitability Analysis)

Categories of Stage I Unsuitable Lands	Defining Information	Current Net Acres
Total National Forest System Lands:		1,065,000
1. Non Forest Land	FSVeg Land Class Codes: 110-Lake 120-Reservoir 140-River 210-Cemetery 220-Powerline 230 Road/Railroad 240-Special Use 250-Wildlife Clearing	(7,000)
2. Withdrawn	Designated Wilderness (1A) Mt. Pleasant National Scenic Area (4F) Research Natural Areas (4B)	(53,000)
3. Irreversible Damage	Land Class Code: 826-Physical barriers AND Site Index < 70	(28,000)
4. Can't Restock	Forest Type: 99-Brush AND Stand Condition Class: 15-Non Stocked	(1,000)
5. Incapable of producing industrial wood	Land Class Code: 900-Incapable of Industrial Wood OR Site Index < 40	(65,000)
Tentatively Suitable Forest Lands		911,000

STAGE II: FINANCIAL ANALYSIS

The second stage analysis is designed to explore the financial efficiency of different timber intensities on the lands identified as tentatively suitable for timber production in Stage I. It does not identify any lands as unsuitable for timber production. Stage III analysis considers the results of these financial efficiencies in making the final determination of lands suited for timber production.

STAGE III: IDENTIFICATION OF SUITABLE ACRES

The third stage analysis is determined by Forest Plan direction. Several criteria were used during this stage to identify lands in this category:

- Based upon consideration of multiple-use objectives, the land is proposed for resource uses that preclude timber production. However, in some management prescription areas that are classified as unsuitable for timber production, timber harvest may occur to meet the desired condition of other resources.
- Other management objectives limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met.
- The lands are not cost-efficient, over the planning horizon, in meeting forest objectives, which includes timber production.

Table 3-7 describes the information used to estimate the acreage within the two categories of the Stage III tentatively suitable lands.

Table 3-7. Final Suitable Acres for Timber Production (Stage III Suitability Analysis)

Categories of Stage III Unsuitable Lands	Defining Information	Current Net Acres
Tentatively Suitable Forest Lands from Stage I Analysis		911,000
1. Withdrawn for Other Resource Purposes – by Management Prescription Area	Recommended Wilderness Study Areas (1B) Eligible Scenic River Corridors (2C2, 2C3) Appalachian Trail Corridor (4A) Geologic Areas (4C1) Special Biologic Areas (4D) Special Heritage Areas (4E) Key Natural Heritage Community Areas (4D1) Shenandoah Mountain Recommended National Scenic Area (4FA) All Administrative Areas (5A, 5B, 5C) Concentrated Recreation Zones (7D) Dispersed Recreation Areas-Unsuitable for Timber Production (7E1) Blue Ridge Parkway Corridor (7F) Pastoral Landscapes (7G) Indiana Bat Primary Areas (8E4a) Riparian Corridors (11) Remote Backcountry Areas (12D) Possible Old Growth not in Old Growth Forest Types 21 & 25	(344,000)
2. Lands Not Appropriate Because They Are Not Cost-Effective to Achieve Timber Production Goals	Site Index <= 40 OR Slope >55% and Forest Type <> 48, 53, 56 and 81*	(115,000)
Total Suitable Land		452,000

* Forest types 48, 53, 56, and 81 are northern red oak-hickory-yellow pine, white oak-red oak-hickory, yellow poplar-white oak-red oak, and sugar maple-beech-yellow birch, respectively.

Lands suitable for timber production are located in eight management prescriptions. These prescriptions contain both suitable and unsuitable lands. Final determination of suitability for timber production is determined at the site-specific project level. During this project level determination, lands identified as suitable for timber production must total no more than 452,000 acres across the forest.

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