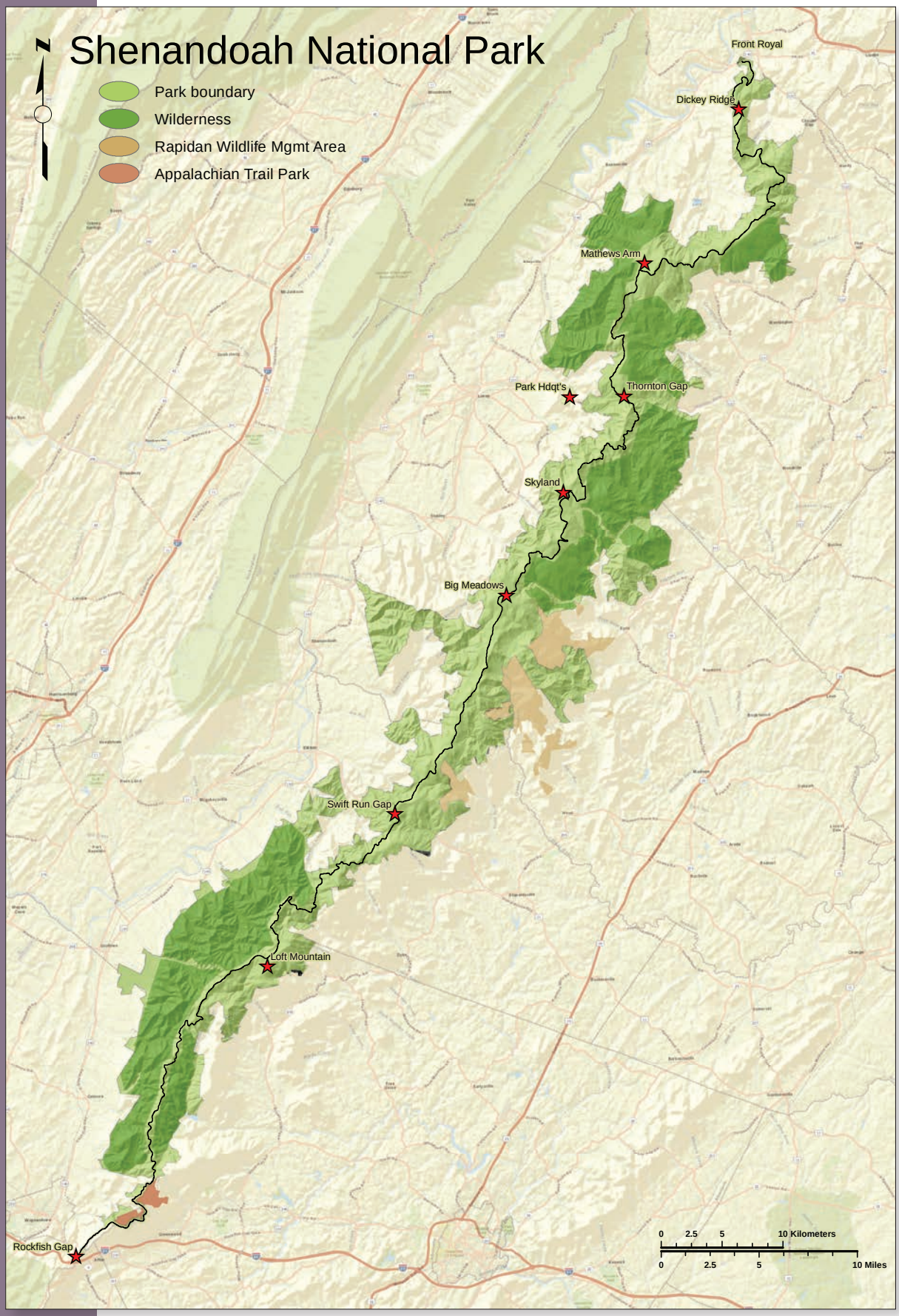
NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

Foundation Document

Shenandoah National Park

Virginia

April 2015


Shenandoah National Park
Park boundary
Wilderness
Rapidan Wildlife Mgmt Area
Appalachian Trail Park
Front Royal
Dickey Ridge
Mathews Arm
Park Hdqt's
Thornton Gap
Skyland
Big Meadows
Swift Run Gap
Loft Mountain
Rockfish Gap
0 2.5 5 10 Kilometers
0 2.5 5 10 Miles

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Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship**: We share a commitment to resource stewardship with the global preservation community.
- **Excellence**: We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity**: We deal honestly and fairly with the public and one another.
- **Tradition**: We are proud of it; we learn from it; we are not bound by it.
- **Respect**: We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises 401 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.

The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological values.

Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park's purpose, significance, fundamental resources and values, other important resources and values, and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine what the most important attributes of the park are. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a (hard copy) paper product and as geospatial data for use in a web mapping environment. The park atlas for Shenandoah National Park can be accessed online at: http://insideparkatlas.nps.gov/.

Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, other important resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

Brief Description of the Park

Shenandoah National Park lies along the crest of the Blue Ridge Mountains in north central Virginia, less than 90 miles southwest of Washington, DC. The park stretches about 80 miles north to south and consists of more than 197,000 acres, including nearly 80,000 acres of designated wilderness. The park straddles habitats of both the northern and southern Appalachians and supports a rich assemblage of approximately 2,100 species of flora and fauna. Rock outcrops punctuate this otherwise forested habitat. Skyline Drive, a world-famous park tour road, traverses the length of the park for 105 miles and provides opportunities for outstanding views of the Shenandoah Valley and the Piedmont from the Drive's numerous overlooks. The park boasts 500 miles of hiking trails, including 101 miles of the famous Appalachian Trail, as well as several historically significant landmarks including Skyland, Rapidan Camp, and structures built by the Civilian Conservation Corps (CCC).

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Shenandoah National Park was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The park was authorized when the enabling legislation adopted by Congress was signed into law on May 22, 1926 (see appendix A for enabling legislation). The purpose statement lays the foundation for understanding what is most important about the park.

Shenandoah National Park preserves and protects nationally significant natural and cultural resources, scenic beauty, and congressionally designated wilderness within Virginia's northern Blue Ridge Mountains, and provides a broad range of opportunities for public enjoyment, recreation, inspiration, and stewardship.

Park Significance

Significance statements express why a park's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Shenandoah National Park, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the park and why an area is important within a global, national, regional, and systemwide context. They focus on the most important resources and values that will assist in park planning and management.

The following significance statements have been identified for Shenandoah National Park. (Please note that the sequence of the statements does not reflect the level of significance.)

- Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east.
- Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic.
- Encompassing more than 300 square miles of the Blue Ridge Mountains, Shenandoah National Park protects an abundance of native and globally rare animal and plant populations, habitats, migratory bird populations, and the endangered Shenandoah salamander, which lives nowhere else in the world. As one of the largest preserved areas in the Mid-Atlantic region, the park provides an ideal place for scientific research and understanding of the Central Appalachian Biome.
- Shenandoah National Park showcases the geology and high elevation hydrology of the Appalachians, one of the oldest mountain ranges in the world. The high elevation ecosystems and headwaters preserved in the park help contribute to the ecological integrity of valuable cold-water resources downstream. All headwater streams in the park flow to the Chesapeake Bay, the largest estuary in the eastern United States.
- The first Civilian Conservation Corps camp in a national park system unit was established in Shenandoah National Park; the Corps left an indelible mark on the landscape that still contributes to the unique character of the park.
- The Commonwealth of Virginia, private businesses, and local citizens, with the support of the federal government, banded together to advocate for the creation of a national park in the eastern United States through purchase and condemnation of privately owned land. The land acquired by the Commonwealth of Virginia was later donated to the American people and entrusted to the National Park Service to ensure its protection for current and future generations.
- In 1950, more than a decade before the 1964 Civil Rights Act became law, Shenandoah National Park, by order of the Secretary of the Interior and despite regional practices, became a legally desegregated public space with fully integrated visitor facilities.
- President Herbert Hoover constructed Rapidan Camp to serve as the summer White House during his presidency (1929–1933) due to its outstanding recreational opportunities and serene mountain setting. The camp, which President Hoover later donated to the federal government as a presidential retreat, was the site of many national and international policy meetings and is now designated as a national historic landmark.

Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Fundamental resources and values are closely related to a park's legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Shenandoah National Park:

- **Healthy, Functioning Ecosystems:** Within the park, ridges and peaks—some rising to elevations over 4,000 feet—tower above the Virginia Piedmont to the east and the Shenandoah Valley to the west. Here one finds a range of elevations, aquatic resources, terrain features, and soil types, which in turn support a variety of ecological communities. Many plant and animal species present in the high-elevation areas of the park are characteristic of those found in far northern latitudes such as Eastern and Central Canada. The park is not just an ecological refuge and place of biodiversity; it also provides ecosystem services to millions of Americans, such as water filtration and carbon storage.

- **Wilderness Character:** Shenandoah contains nearly 80,000 acres of congressionally designated wilderness, nearly 40% of the park's acreage. This makes the Shenandoah Wilderness the third largest wilderness area east of the Mississippi River and one of the closest wilderness areas to a major population center. The wilderness offers exceptional unconfined recreation opportunities and the chance to experience natural quiet, solitude, dark night skies, and nature untrammeled. This wilderness, which was once settled, farmed, and logged, stands as symbol of the regenerative ability of the deciduous forests of the Appalachian Range.

- **Iconic Destinations:** Shenandoah National Park is renowned for its iconic destinations, which draw visitors from nearby urban areas, across the nation, and around the globe. The destinations vary widely: a challenging scramble to the summit of Old Rag, an autumn ride along Skyline Drive, a leisurely ramble through Big Meadows, or a visit to historic Rapidan Camp, which was the "summer White House" during the Hoover presidency.

- **A Broad Range of Visitor Experiences:** Shenandoah National Park offers a broad range of visitor experiences and recreation opportunities; from a scenic drive and a weekend getaway in a comfortable lodge, to a challenging multi-night hike through backcountry and wilderness. The park's diverse trail system is more than 500 miles in length and includes 101 miles of the world famous Appalachian National Scenic Trail, the most easily accessed segment of the Appalachian Trail across its length. As a whole, the park offers opportunities to connect to nature, discover history, find adventure, and just relax amid outstanding scenery.

- **Skyline Drive:** Skyline Drive, a national historic landmark and national scenic byway, is widely regarded as one of the most beautiful drives in the United States. The drive follows the crest of the Blue Ridge Mountains for 105 miles and offers dozens of scenic overlooks. This drive is the park's main thoroughfare, providing access to iconic destinations and trailheads, but is often driven as an experience in and of itself. Skyline Drive is also the only road along the crest of the Appalachian Mountains maintained for the sole purpose of recreation.

- **Scenic Beauty:** Shenandoah is a place of stunning scenic beauty, especially for those seeking escape from the pavement, brick, and steel of the eastern seaboard's bustling urban centers. Here, visitors can feast their eyes on forested mountains, lush valleys, shaded hollows, cascading streams, long sweeping ridges, and star-filled skies. The views are vast and extend well beyond the park boundaries into neighboring lands.

- **Clean Air:** The park is one of only 49 Class I air areas under the Clean Air Act. Clean air contributes to the ecological health of the park's flora and fauna, and is also critical to maintaining a high-quality visitor experience from a human health perspective, as well as through the preservation of the extensive vistas found throughout the park.

- **Partnerships and Volunteerism:** Partnerships and volunteerism are critical to resource stewardship and the operations of the park. Partner groups and individual volunteers maintain 300 miles of trail in Shenandoah, equal to 60% of the total trail mileage. Partner organizations are also critical in fundraising, education, and interpretive programs, as well as in the management and operation of the park's lodges and comfort stations.

- **Evidence of Human Uses of the Land:** Shenandoah National Park contains historic homesteads, orchards, and road traces, more than 100 cemeteries, as well as 500 known archeological sites. These resources represent thousands of years of human use of the area and signify important periods in American history.

Other Important Resources and Values

Shenandoah National Park contains other resources and values that are not fundamental to the purpose of the park and may be unrelated to its significance, but are important to consider in planning processes. These are referred to as "other important resources and values" (OIRV). These resources and values have been selected because they are important in the operation and management of the park and warrant special consideration in park planning.

The following other important resources and values have been identified for Shenandoah National Park:

- **Historic Structures:** The park has hundreds of historic structures and buildings, ranging from culverts along Skyline Drive to the Mount Vernon Furnace, a hot blast iron furnace built in the 1830s. Many structures and buildings were constructed in the 1930s, during the height of Civilian Conservation Corps activity in the park. Together, these historic structures help tell the story of American settlement and conservation efforts in the Blue Ridge Mountains.

- **The Park Collections:** The park has a vast museum collection made up of photos, drawings, early park souvenirs, and memorabilia from major events in the park's past. These items are tangible representations of the park's storied history.

Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, park purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for park staff to develop opportunities for visitors to explore and relate to all park significance statements and fundamental and other important resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by park resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the park and its resources. These themes help explain why a park story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the park.

The following interpretive themes have been identified for Shenandoah National Park:

- **A Western National Park in the East (Park Establishment):** Made possible by the personal sacrifices of many, the creation of Shenandoah National Park illustrates a milestone in the park and conservation movements by fulfilling a vision shared by local, state, and federal advocates to create a "western" national park experience in the east. Readily accessible to major metropolitan populations, Shenandoah preserves the scenic beauty of Virginia's Blue Ridge Mountains and provides economic and recreational benefits for the greater good of the American people.

- **A Park for the People (Recreation and Development):** Influenced and shaped by economics, politics, public expectations, and prevailing social norms, Shenandoah National Park provides visitors access to diverse outdoor recreational opportunities. Shenandoah offers escape from everyday life, challenge for the mind and body, and the rejuvenation, relaxation, and renewal fostered by immersion in a natural mountain landscape.

- **Nature Reclaimed (Natural Resources):** Although it may appear to be untouched and natural, the dynamic and ever-changing environment of Shenandoah National Park is rather the product of thoughtful land management decisions to reclaim, restore, and protect the mountain ecosystem, wilderness, and headwaters of three watersheds; to preserve the ecological and natural processes of the Blue Ridge/Central Appalachian biome; and to provide refuge for globally rare and endangered flora and fauna.

- **History Revealed (Cultural Resources):** Within the boundaries of Shenandoah National Park is evidence of the stories of thousands of years of human interactions with the mountain landscape, illustrating dramatic changes—from being a place for home, sustenance, and livelihood to being a place for refuge, recreation, and re-creation for millions.

- **Caring for the Gift (How We Manage):** Forever connected with the surrounding world, the survival of Shenandoah National Park is dependent upon effective management of numerous complex challenges brought by local, regional, and global environmental threats and society's changing demands. The park's future depends on the application of the most current scientific knowledge and sound visitor and resource management practices, combined with the active support and commitment of a caring citizenry.

Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental and other important resources and values change over time, the analysis of planning and data needs will need to be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

Special Mandates and Administrative Commitments

Many management decisions for a park unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a park that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the park, or through a judicial process. They may expand on park purpose or introduce elements unrelated to the purpose of the park. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, arrangements for emergency service responses, etc. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the park and facilitate working relationships with other organizations. They are an essential component of managing and planning for Shenandoah National Park.

For more information about the existing special mandates and administrative commitments for Shenandoah National Park, please see appendix B.

Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the park's fundamental and other important resources and values, and develop a full assessment of the park's planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

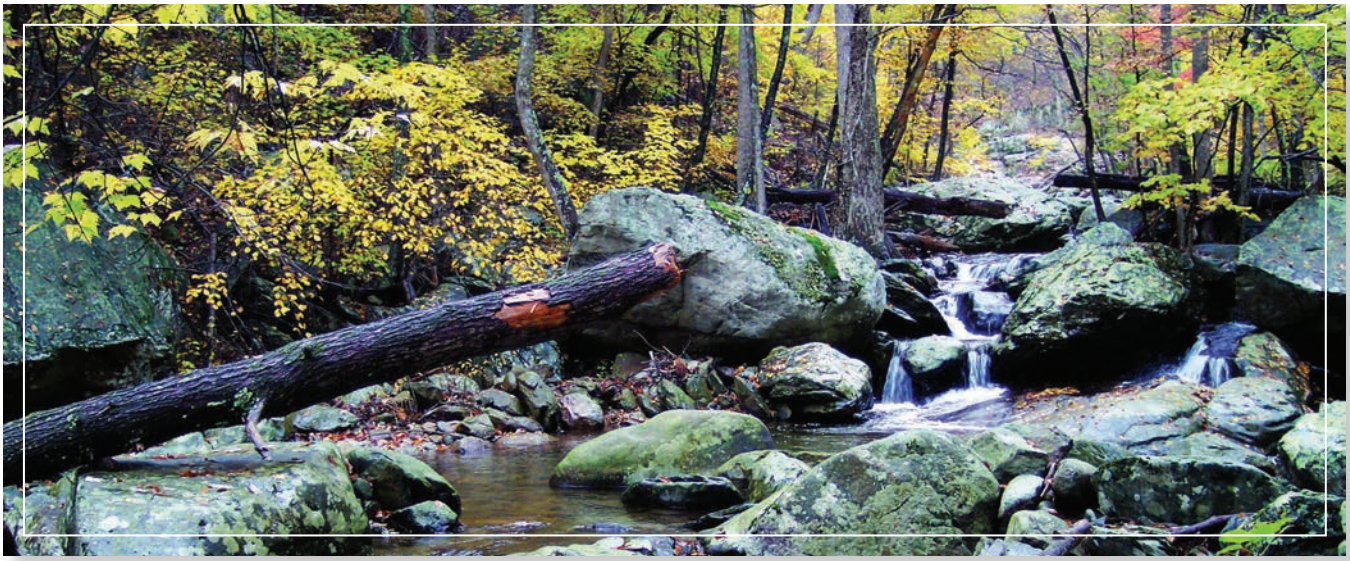
There are three sections in the assessment of planning and data needs:

1. analysis of fundamental and other important resources and values
2. identification of key issues and associated planning and data needs
3. identification of planning and data needs (including spatial mapping activities or GIS maps)

The analysis of fundamental and other important resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.

Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value.



Fundamental Resource or Value	Healthy, Functioning Ecosystems
Related Significance Statements	• Encompassing more than 300 square miles of the Blue Ridge Mountains, Shenandoah National Park protects an abundance of native and globally rare animal and plant populations, habitats, migratory bird populations, and the endangered Shenandoah salamander, which lives nowhere else in the world. As one of the largest preserved areas in the Mid-Atlantic region, the park provides an ideal place for scientific research and understanding of the Central Appalachian Biome. • Shenandoah National Park showcases the geology and high elevation hydrology of the Appalachians, one of the oldest mountain ranges in the world. The high elevation ecosystems and headwaters preserved in the park help contribute to the ecological integrity of valuable cold-water resources downstream. All headwater streams in the park flow to the Chesapeake Bay, the largest estuary in the eastern United States. • Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic.

Fundamental Resource or Value	Healthy, Functioning Ecosystems
Current Conditions and Trends	**Conditions** • Overall, the ecosystems of Shenandoah National Park are in good condition. • The park is currently completing a natural resource condition assessment for more precise resource information. • There are issues with human/wildlife interactions; visitors feeding animals is the biggest problem. • Forest composition has changed and continues to change as a result of diseases, but forests in the park are generally healthy and resilient. • Acid rain impacts fish abundance and diversity. • Deer are overabundant in developed areas of the park, but are less of an issue in backcountry and wilderness areas. • There are fire dependent vegetative communities in the park; the prescribed fire regime is not keeping up due to lack of resources. • The park is heavily invested in and dependent on volunteers for natural resource management issues. This helps the park build and maintain community relationships and be efficient with limited funding, but also makes protection of park resources vulnerable to unpredictability inherent in volunteer positions as compared to paid positions. • The park serves as a harbor from noise and artificial light that could otherwise change natural conditions and natural processes in the area. **Trends** • Most native wildlife populations are healthy and stable, although data on some populations are not sufficient. • The Shenandoah salamander, a federally endangered species, is in decline. It currently lives in three areas of the park. • Most of the trout populations have declined in recent years, except for native brook trout. • Rock outcrops are home to rare plant species and have become high visitor use areas due in part to the sweeping views they afford.
Threats and Opportunities	**Threats** • Chronic wasting disease has been documented in the area and may move into the park's ungulate population. • Emerald ash borer has impacted tree species in the park. • Invasion by nonnative plants and animals is a serious threat to the park's ecological communities, especially when the long boundary is considered. • One-quarter of the park's vascular plants are nonnative (approximately 350–360 species in total). • Climate change – an increase in mean annual temperature (3°F to 5°F by 2050) and precipitation (+ 7% to 9% by 2050) projected for the region will alter the park's ecological systems. **Opportunities** • Work outside the park with the public, partners, and landowners to reduce the impacts of external threats, especially invasive plants. • Update plans related to natural resource management; most or all of the plans in the park related to natural resources are from the 1980s and 1990s. • Continue to educate the public about resource threats, especially the Shenandoah salamander, climate change, invasive species, and water and air quality. • Provide advanced interpretation of the influences of a changing climate on the ecosystems of Shenandoah National Park.

Fundamental Resource or Value	Healthy, Functioning Ecosystems
Existing Data and Plans Related to the FRV	• Fire management plan. • Gypsy moth integrated pest management plan. • Bear management plan. • *Geology along Shenandoah National Park, Virginia.* • Evaluation of several water systems in Shenandoah National Park. • *Acidic Deposition Impacts on Natural Resources in Shenandoah National Park.* • Hydrology of Big Meadows, Shenandoah National Park, Virginia. • Assessment of a sensitive wetland system in the Blue Ridge Mountains. • *Rock Outcrop Management Plan Environmental Assessment/Assessment of Effect.* • *Significance of Headwater Streams and Perennial Springs in Ecological Monitoring in Shenandoah National Park.* • Synthesis and interpretation of surface-water quality and aquatic biota data collected in Shenandoah National Park, Virginia, 1979–2009. • Weather of Shenandoah National Park Mid-Atlantic Network summary reports (2012, 2011, 2010). • *Aquatic Macro Invertebrate Monitoring in Shenandoah National Park, 2009 Summary Report.* • *Fish Monitoring in Shenandoah National Park, 2010 Summary Report.* • *Forest Vegetation Status in Shenandoah National Park, Long-term Ecological Monitoring Summary Report 2003–2011.* • Prioritizing forest communities and areas for the use of prescribed fire at Shenandoah National Park. • *Virginia Trout Stream Sensitivity Study 2010 Survey, Results for Shenandoah National Park.* • Evaluation of the sensitivity of inventory and monitoring national parks to acidification effects from atmospheric sulfur and nitrogen deposition. • Mid-Atlantic Network evaluation of the sensitivity of inventory and monitoring national parks to nutrient enrichment effects from atmospheric nitrogen deposition. • Mid-Atlantic Network aquatic critical loads and exceedances in acid-sensitive portions of Virginia and West Virginia results of southeastern multiagency critical loads research project. • *Shenandoah Watershed Study 2007 Report.* • Vegetation of Shenandoah National Park in relation to environmental gradients, version 2.0. • Effects of stream water chemistry on mercury concentrations in brook trout in Shenandoah National Park.
Data and/or GIS Needs	• Analysis of long-term data collected on park ecosystems. • Climate change vulnerability assessment.
Planning Needs	• Emerald ash borer management plan. • Exotic plant management plan. • Feral hog management plan. • External threats mitigation strategy. • Resource stewardship strategy. • Restoration plan for pH impaired streams. • Climate change scenario planning.

Fundamental Resource or Value	Healthy, Functioning Ecosystems
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act of 1977 • Volunteers in the Parks Act of 1969 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13352, "Facilitation of Cooperative Conservation" • Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" • Executive Order 13443, "Facilitation of Hunting Heritage and Wildlife Conservation" • Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Endangered and Threatened Wildlife and Plants" (50 CFR 17) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 7: *Volunteers in Parks* • Director's Order 18: *Wildland Fire Management* • NPS *Reference Manual 18: Wildland Fire Management* • *Interagency Burned Area Emergency Response Guidebook* • Director's Order 25: *Land Protection* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 32: *Cooperating Associations* • Director's Order 47: *Soundscape Preservation and Noise Management* • *NPS-75 Natural Resources Inventory and Monitoring Guideline* • Director's Order 75A: *Civic Engagement and Public Involvement* • NPS *Natural Resource Management Reference Manual 77* • NPS *Integrated Pest Management Manual* • NPS *Guidelines for the Treatment of Cultural Landscapes*

Fundamental Resource or Value	Wilderness Character
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east. • Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic. • Encompassing more than 300 square miles of the Blue Ridge Mountains, Shenandoah National Park protects an abundance of native and globally rare animal and plant populations, habitats, migratory bird populations, and the endangered Shenandoah salamander, which lives nowhere else in the world. As one of the largest preserved areas in the Mid-Atlantic region, the park provides an ideal place for scientific research and understanding of the Central Appalachian Biome. • Shenandoah National Park showcases the geology and high elevation hydrology of the Appalachians, one of the oldest mountain ranges in the world. The high elevation ecosystems and headwaters preserved in the park help contribute to the ecological integrity of valuable cold-water resources downstream. All headwater streams in the park flow to the Chesapeake Bay, the largest estuary in the eastern United States.

Fundamental Resource or Value	Wilderness Character
Current Conditions and Trends	**Conditions** • Backcountry permits are often obtained through self-registration (approximately 60%), so not a lot of information is available about visitors to the wilderness, overnight stays, demographics, destination, and trail use. • Visitors camping in the backcountry create social trails and cause stream bank erosion and loss of vegetation around popular camping areas with concentrated use impacts. There are currently no formally designated backcountry campsites. • Compliance with burying human waste is relatively good. There are a few privies (in popular areas). **Trends** • Some areas within the wilderness are experiencing increasing levels of visitation, especially Old Rag. • Backcountry and wilderness use (measured through user-nights) has been steady, with a slight increase in the last few years. • As frontcountry camping areas fill on popular days, visitors sometimes self-direct to backcountry and wilderness sites. This can be problematic, as some visitors are not prepared for wilderness and backcountry camping.
Threats and Opportunities	**Threats** • Threats to the natural quality of wilderness include loss of native species, climate change, air pollution, the proliferation of nonnative species (including alteration of fire regimes and natural disturbance cycles), and activities outside the park resulting in reduced water quality in the wilderness. • Threats to the undeveloped quality of wilderness include structures inside of wilderness, short-term use of motorized equipment and mechanical transport in wilderness, and semipermanent equipment placed by wilderness researchers. • Threats to the untrammeled quality of wilderness include nonnative vegetation removal, ignition of fires, wildlife research, and wildland fire suppression. • Threats to the solitude and primitive and unconfined types of recreation quality of wilderness include lack of understanding of wilderness values, increased visitation in popular areas of wilderness (reducing solitude), enlargement of campsites due to visitor-caused impacts, noise from sources inside and outside the park, artificial light, and the deposition of human waste and trash. Developments outside the wilderness also threaten visitors' ability to obtain solitude inside wilderness. This is especially problematic because most of the adjacent land is privately owned. • Increases in air pollution may degrade visibility, reducing opportunities to view the spectacular scenery and night sky, and detract from visitor experience. **Opportunities** • Revise the backcountry and wilderness plan. • Consider a fee for backcountry and overnight use. • Clarify the distinction between backcountry and wilderness, for visitors and park employees—allowed uses, motorized equipment, etc. • Develop and implement a monitoring plan for wilderness character (once standards are developed).
Existing Data and Plans Related to the FRV	• Backcountry and wilderness management plan.
Data and/or GIS Needs	• Resource impacts study at iconic destinations and in wilderness.

Fundamental Resource or Value	Wilderness Character
Planning Needs	• Backcountry and wilderness management plan update. • Visitor use management plan for Old Rag.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Federal Lands Recreation Enhancement Act (related to fees) • Outdoor Recreation Act • Volunteers in the Parks Act of 1969 • Wilderness Act • Clean Air Act of 1977 • Executive Order 13287, "Preserve America" • Executive Order 13352," Facilitation of Cooperative Conservation" • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 7: *Volunteers in Parks* • Director's Order 17: *National Park Service Tourism* • Director's Order 18: *Wildland Fire Management* • NPS *Reference Manual 18: Wildland Fire Management* • *Interagency Burned Area Emergency Response Guidebook* • Director's Order 25: *Land Protection* • Director's Order 32: *Cooperating Associations* • Director's Order 41: *Wilderness Stewardship* • NPS *Reference Manual 41: Wilderness Stewardship* • Director's Order 47: *Soundscape Preservation and Noise Management* • *NPS-75 Natural Resources Inventory and Monitoring Guideline* • Director's Order 75A: *Civic Engagement and Public Involvement* • NPS *Natural Resource Management Reference Manual 77*

Fundamental Resource or Value	Iconic Destinations
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east. • Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic. • The first Civilian Conservation Corps camp in a national park system unit was established in Shenandoah National Park; the Corps left an indelible mark on the landscape that still contributes to the unique character of the park. • President Herbert Hoover constructed Rapidan Camp to serve as the summer White House during his presidency (1929–1933) due to its outstanding recreational opportunities and serene mountain setting. The camp, which President Hoover later donated to the federal government as a presidential retreat, was the site of many national and international policy meetings and is now designated as a national historic landmark.
Current Conditions and Trends	**Conditions** • The impact thresholds at these sites depend on resource type. • Some natural destinations are experiencing resource degradation because of high level of visitor use. These sites are affected by litter, human waste, social trailing, tread creep, illegal fires, and illegal campsites. • Some roads to provide search and rescue (SAR) access are in poor condition. • The park has SAR caches near the summit of Old Rag, and there are good response times to emergencies at all these sites. • Some parking areas are inadequate for the high level of visitor use at these sites. • Dogs are often brought to sites where dogs are not allowed, and where they are allowed, there is sometimes a problem with dogs being off-leash. • User demographics differ among these iconic sites. • Rapidan Camp is accessed by hikers and by guided shuttle bus tours. The shuttle bus tour is universally accessible and an attractive option with seniors. Hikers represent a larger portion of users at Rapidan Camp than shuttle bus users. • The shuttle bus is often inadequate for the condition of the road. • The park currently leases private land for parking at Old Rag boundary access and is developing a lease for Whiteoak Canyon boundary access. **Trends** • Old Rag Mountain and Whiteoak Canyon are experiencing increased boundary access issues. As the use increases there's a greater need to provide services to visitors at these sites, but limited ability to do so because access to them begins on the edge of the park boundary. • Visitor use of these sites has increased. • Large organized groups accessing these sites lead to a surge of visitors at one time. This amount of use at one time leads to user conflicts.

Fundamental Resource or Value	Iconic Destinations
Threats and Opportunities	**Threats** • High levels of visitor use during peak times. • Resource degradation from high visitor use. • Climate change may alter visitor use patterns, leading to increased resource degradation. • Sensitive resources at rocky outcrops are especially vulnerable to high visitor use. • Some climbing methods may damage resources and rock. • There are difficulties maintaining and funding the maintenance of the shuttle to Rapidan. • There is misinformation about these iconic sites on websites that are not controlled by the park. **Opportunities** • Analyze existing visitor use information (i.e., past surveys, studies, etc.). • Visitor preferences of various user demographics at the various sites could be identified through surveys or other means. • Provide more pre-trip planning opportunities through park website and in partnership with gateway communities. Prepare visitors to visit these iconic destinations, many of which require a strenuous hike, or inform them about peak crowded times so they may choose alternate times.
Existing Data and Plans Related to the FRV	• Rock outcrop management plan. • Backcountry management plan. • Fire management plan. • Big Meadows management plan. • Historic furnishing report – provides guidance for Rapidan.
Data and/or GIS Needs	• Resource impacts study at iconic destinations and in wilderness.
Planning Needs	• Administrative roads plan. • Visitor use management plan for Old Rag. • Backcountry and wilderness management plan update. • Parking management plan for Skyline Drive. • Development concept plan for boundary parking areas.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Americans with Disabilities Act of 1990 • Federal Lands Recreation Enhancement Act • Historic Sites Act of 1935 • National Historic Preservation Act • National Park Service Concessions Management Improvement Act • Rehabilitation Act of 1973 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13327, "Federal Real Property Asset Management" • Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" • Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources"

Fundamental Resource or Value	Iconic Destinations
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV (continued)** • "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities" (28 CFR 36) • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • "Vehicles and Traffic Safety" (36 CFR 4) • "Commercial and Private Operations" (36 CFR 5) • "Concession Contracts" (36 CFR 51) • "National Register of Historic Places" (36 CFR 60) • "National Natural Landmarks Program" (36 CFR 62) • "National Historic Landmarks Program" (36 CFR 65) • "Protection of Historic Properties" (36 CFR 800) • "Nondiscrimination in Federally Assisted Programs of the Department of the Interior," (43 CFR 17) Subpart B: "Nondiscrimination on the Basis of Handicap" • "Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas" **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 14: *Resource Damage Assessment and Restoration* • NPS *Damage Assessment and Restoration Handbook* • Director's Order 17: *National Park Service Tourism* • Director's Order 18: *Wildland Fire Management* • NPS *Reference Manual 18: Wildland Fire Management* • *Interagency Burned Area Emergency Response Guidebook* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* • Director's Order 52C: *Park Signs* • Director's Order 64: *Commemorative Works and Plaques* • NPS *Natural Resource Management Reference Manual 77* • Director's Order 80: *Real Property Asset Management* • NPS *Transportation Planning Guidebook* • *Park Road Standards* • NPS *Guidelines for the Treatment of Cultural Landscapes* • *The Secretary of the Interior's Standards for the Treatment of Historic Properties*

Fundamental Resource or Value	A Broad Range of Visitor Experiences
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east.
Current Conditions and Trends	**Conditions** • Certain recreational opportunities are restricted to specific times of the year; there are currently limited winter opportunities for visitor enjoyment. • Traditional NPS facilities are not adequate for current visitation levels. • Overall trails are in good condition. • No trails are fully accessible per the Architectural Barriers Act. • Separating trail uses helps maintain the trails in good condition (i.e., equestrian use separate from hiking trails). • There are limited opportunities for economical lodging within the park. • There are not enough visitor contact opportunities in the south portion of the park. • The heaviest visitation occurs on weekends and in the fall. **Trends** • There has been growing interest in bicycling on Skyline Drive and administrative roads. • There has been more frequent use of park facilities for large family gatherings, which is creating the need for larger capacity facilities. • Accessible facilities are becoming a need as the main visitor demographic ages. • There is a desire by neighboring counties and communities to establish additional connections to (into) the park. • The condition of concessions facilities had been deteriorating prior to improvements that were made following the recently awarded concessions contract.

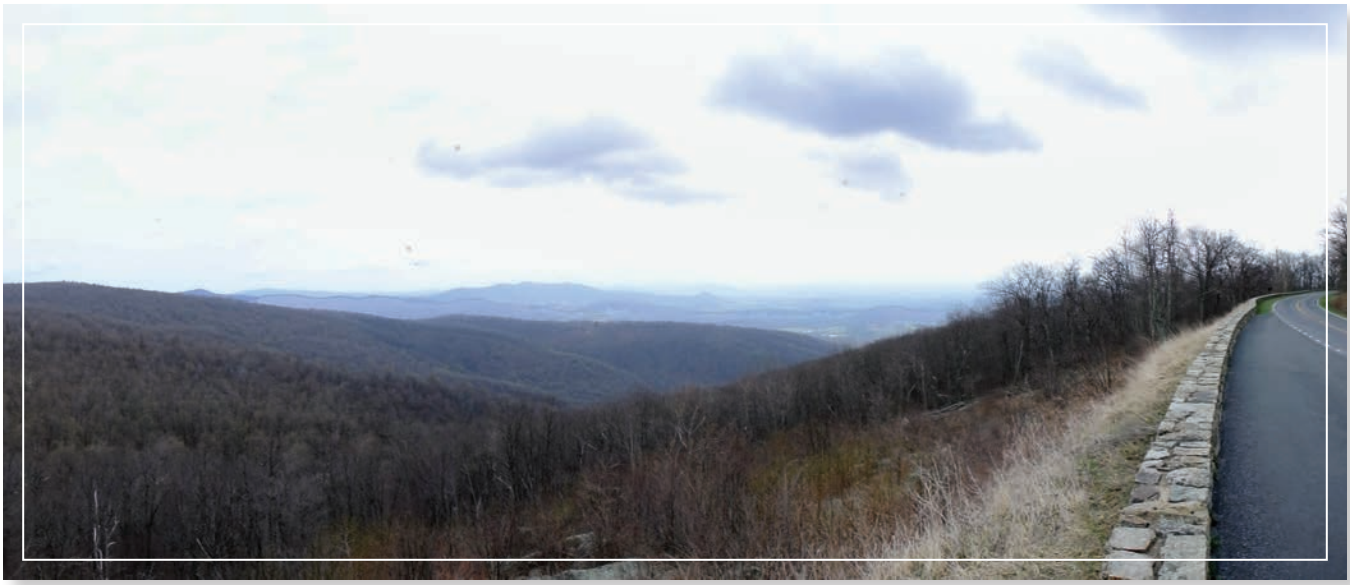
Fundamental Resource or Value	A Broad Range of Visitor Experiences
Threats and Opportunities	**Threats** • Occasional conflicts between user groups, primarily between bicyclists and automobile drivers, threaten the quality and safety of visitor experiences. • Weather, climate change, and fire impacts on physical resources may all threaten the visual quality and potentially the safety of visitor experiences. • Climate change could change peak visitation. For example, an increase in mean annual temperature could result in peak fall colors occurring one or two weeks later. • Overuse of iconic destinations (Old Rag Mountain, Dark Hollow Falls) may threaten resources, lead to crowding, and potentially to visitor conflict. • Development outside of the park may threaten the visual quality of visitor experiences. • Loud vehicles along Skyline Drive contribute to noise pollution and diminish the natural sounds of the park for visitors. • Some new landowners, adjacent to the park boundary, desire to close access points into the park to eliminate visitor traffic on their land. • Lack of adequate maintenance of boundary access points (outside of park boundary). **Opportunities** • Expand types of recreational uses and options for current uses, such as bicycling, in the park. • Expand year round operations in order to increase visitation during off-seasons. • Strengthen commercial use authorization and special use permit program. • Facilities and additional visitor contact points in south end of park could be added and improved. • Advanced interpretation of the influences of a changing climate on the ecosystems of Shenandoah National Park. • There are opportunities to expand use of webcams and virtual visitor experiences to reach out to larger audiences. • Accommodation of additional user groups (e.g., showers near Mathews Arm, more recreational vehicle sites).
Existing Data and Plans Related to the FRV	• Rock outcrop management plan (2014). • Visitor study: summer and fall (2011). • Long-range interpretive plan (2014).
Data and/or GIS Needs	• Dark night skies data collection. • Resource impacts study at iconic destinations and in wilderness. • External audience survey. • Visitor use-related data collection in the Shenandoah Wilderness. • Visitor use surveys along Skyline Drive and other frontcountry areas. • Boundary access evaluation.
Planning Needs	• Backcountry and wilderness management plan update. • Visitor use management plan for Old Rag. • Accessibility transition plan. • Development concept plan for boundary parking areas. • Recreational use plan for Skyline Drive. • Parking management plan for Skyline Drive.

Fundamental Resource or Value	A Broad Range of Visitor Experiences
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Americans with Disabilities Act • Architectural Barriers Act • Federal Lands Recreation Enhancement Act • National Park Service Concessions Management Improvement Act • Noise Control Act • Outdoor Recreation Act • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities" (28 CFR 36) • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • "Vehicles and Traffic Safety" (36 CFR 4) • "Commercial and Private Operations" (36 CFR 5) • "Concession Contracts" (36 CFR 51) • "Nondiscrimination in Federally Assisted Programs of the Department of the Interior," (43 CFR 17) Subpart B: "Nondiscrimination on the Basis of Handicap" • "Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas" **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 17: *National Park Service Tourism* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* • Director's Order 47: *Soundscape Preservation and Noise Management* • *NPS-75 Natural Resources Inventory and Monitoring Guideline* • Director's Order 75A: *Civic Engagement and Public Involvement* • NPS *Natural Resource Management Reference Manual 77* • NPS *Transportation Planning Guidebook* • *Park Road Standards*

Fundamental Resource or Value	Skyline Drive
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east. • The first Civilian Conservation Corps camp in a national park system unit was established in Shenandoah National Park; the Corps left an indelible mark on the landscape that still contributes to the unique character of the park. • The Commonwealth of Virginia, private businesses, and local citizens, with the support of the federal government, banded together to advocate for the creation of a national park in the eastern United States through purchase and condemnation of privately owned land. The land acquired by the Commonwealth of Virginia was later donated to the American people and entrusted to the National Park Service to ensure its protection for current and future generations.
Current Conditions and Trends	**Conditions** • Skyline Drive is in good condition. • Two-thirds of the drive has been paved in the last four years. One-third of the drive will need to be paved in the next four years. • All but five of the overlooks have been paved or reconstructed (the repaving effort started in 2008). • Twenty-five percent of vistas are in good condition. The condition of the remaining vistas varies. • One mile of historic guidewall is in good condition; three miles are in poor condition. • Guardwalls are in good condition. • There are 1500 culverts along the drive. Overall, the culverts are in good condition. • The bridges are in good condition. • Marys Rock Tunnel is in good condition, but seepage has become an issue. The Federal Highway Administration examines Marys Tunnel every two years for integrity and safety. • Most of the major parking areas (popular trailheads) have recently been paved. • Vegetation management needs to be done every five to seven years. Twenty to 30 vistas are maintained per year; there are 162 total. • All interpretive and trailhead signs along the drive are being updated. • Internet connectivity is an issue in the park and limits the ability of the park to use more modern media at waysides. • Fall is the period of highest visitation and congestion. Weekends are when most use occurs throughout the year. • There is good information on traffic/vehicular counts, but some bicycling use is not accounted for, so counts of cyclists are inaccurate. **Trends** • There has been an increase in motorcycle and bicycle use of the drive. Bicycling traffic in particular has increased dramatically, especially large groups of bicyclists. There has been an increase in complaints in the last decade (from motorists) about bicycling groups. • Several vocal bicycling groups are proposing that Skyline Drive become a designated long-distance bicycling route. • There has been an increase in complaints about motorcycle noise. • Vegetation maintenance has been reduced in frequency due to lack of financial resources.

Fundamental Resource or Value	Skyline Drive
Threats and Opportunities	**Threats** • In recent years, American Recovery and Reinvestment Act funding has been important to the maintenance of Skyline Drive, and this has offset cuts in the regular operating budget. • Rockslides are a constant threat throughout the year. Climate change may lead to an increase in the frequency of rock slides due to increased severe storm events. • There is a perception that Skyline Drive is a separate entity, apart from Shenandoah National Park. This inaccurate perception is reinforced through highway signs. • Funding for vista management is a challenge. Vista management is not base-funded; it is accomplished through recreation fees, which is less reliable. • An increase in mean annual temperature projected for the region due to climate change could increase operational costs associated with mowing and an increase in invasive species (e.g., invasive species treatments). **Opportunities** • Consider alternatives to strategically opening sections of Skyline Drive after storm events, including working with concessions to potentially clear snow within their land assignments. • Work with gateway communities to identify gaps in services that are offered to visitors. • Explore options for accommodating nonvehicular users on Skyline Drive (e.g., temporary section closures, lane closures, bike lanes or multiuse paths, etc.). • Improve ability to communicate open/closure/hazards information on Skyline Drive to visitors in real time. This issue has been studied in the past and would be best addressed virtually, through the web. • Develop a brochure or book that details "quiet short walks / leg-stretcher walks" off Skyline Drive that would encourage people (especially less-mobile visitors) to get out of their cars and connect to park resources. • Improve information at entrance stations and along Skyline Drive focusing on proper etiquette for cyclists and drivers (share the road, how to pass, how to ride respectfully). • Use the traffic noise displays and associated public information to help motorists understand the noise levels and impacts of vehicles on park resources. • Consider use of quiet pavement in future resurfacing projects.
Existing Data and Plans Related to the FRV	• Winter operations plan. • Mowing plan. • Cultural landscape inventory for the drive. • Wayside plan.
Data and/or GIS Needs	• Resource impacts study at iconic destinations and in wilderness. • Visitor use surveys along Skyline Drive and other frontcountry areas. • Natural sounds inventory.
Planning Needs	• Recreational use plan for Skyline Drive. • Cultural landscape report for Skyline Drive vistas and overlooks. • Parking management plan for Skyline Drive.

Fundamental Resource or Value	Skyline Drive
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Noise Control Act • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13327, "Federal Real Property Asset Management" • Executive Order 13352, "Facilitation of Cooperative Conservation" • Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" • Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • "Vehicles and Traffic Safety" (36 CFR 4) • "Commercial and Private Operations" (36 CFR 5) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 14: *Resource Damage Assessment and Restoration* • NPS *Damage Assessment and Restoration Handbook* • Director's Order 17: *National Park Service Tourism* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 32: *Cooperating Associations* • Director's Order 47: *Soundscape Preservation and Noise Management* • Director's Order 52C: *Park Signs* • Director's Order 75A: *Civic Engagement and Public Involvement* • Director's Order 80: *Real Property Asset Management* • NPS *Transportation Planning Guidebook* • *Park Road Standards* • NPS *Guidelines for the Treatment of Cultural Landscapes*



Fundamental Resource or Value	Scenic Beauty
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east. • Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic.
Current Conditions and Trends	**Conditions** • The majority of viewsheds are not protected by the park. With the exception of a few state wildlife management areas, all lands outside the park boundary are privately owned. • Some adjacent counties have more restrictive development plans than others. • Warren County has night sky protection regulations, others counties unknown. • Existing park facilities, such as Skyline Drive and visitor centers, may contribute to light pollution. • Although the park night sky quality is partially degraded due to the proximity of the multiple population centers, the conditions at Shenandoah are better than surrounding areas. Scenic views are sometimes marred by air pollution haze. **Trends** • Increasing external development. • Though air quality is improving over time, continued improvement remains threatened from outside influences.
Threats and Opportunities	**Threats** • Vegetation overgrowth at overlooks and invasive species make it challenging to maintain views within the park. • Diminished air quality from air pollution from surrounding development. • Climate change has the potential to change views in a variety of ways. • External development, such as housing developments, cell phone towers, and utility corridors, all diminish the scenic views from the park. • Artificial light from nearby land uses and population centers could further impact night sky views. **Opportunities** • Work with neighboring communities and businesses to protect viewsheds and night skies. • Collaborate with partners to obtain additional scenic easements. • Examine how park facilities may be impacting scenic beauty and night sky and look for ways to mitigate where possible. • Investigate ways to proactively mitigate effects on scenic views from climate change.
Existing Data and Plans Related to the FRV	• Assessment of air quality and related values (2003). • Air quality in national parks trends (2003–2012) and conditions (2008–2012). • Vistas management plan. • Meadow management plan (1985). • Cultural landscape inventory (CLI) Skyline Drive landscape (2011). • CLI Simmons Gap (2011). • CLI Elkwallow (2011).

Fundamental Resource or Value	Scenic Beauty
Existing Data and Plans Related to the FRV	• CLI Skyline Drive – South District (2010). • CLI Skyline Drive – North District (2010). • CLI Skyline Drive – Central District (2010). • CLI South River picnic grounds (2009). • CLI Rapidan Camp (2009). • CLI Piney River revised 2006 (2009). • CLI Headquarters (2009). • CLI Dickey Ridge (2009). • CLI Big Meadows (2009). • CLI Skyland (1999). • CLI Pinnacles picnic ground (1999). • CLI Lewis Mountain (1999). • CLI Appalachian Trail landscape (1999). • CLI Appalachian Trail – South District (1999). • CLI Appalachian Trail – North District (1999). • CLI Appalachian Trail – Central District (1999).
Data and/or GIS Needs	• Dark night skies data collection. • Finish light detection and ranging (LIDAR) collection.
Planning Needs	• Emerald ash borer management plan. • Exotic plant management plan. • Resource stewardship strategy. • Cultural landscape reports for Skyline Drive vistas and overlooks. • Scenery conservation plan.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act of 1977 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13352, "Facilitation of Cooperative Conservation" • Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" • Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Resource Protection, Public Use, and Recreation" (36 CFR 2) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • NPS *Management Policies 2006*, section 4.10 "Lightscape Management" • Director's Order 25: *Land Protection* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 32: *Cooperating Associations* • Director's Order 75A: *Civic Engagement and Public Involvement* • NPS *Natural Resource Management Reference Manual 77*

Fundamental Resource or Value	Clean Air
Related Significance Statements	• Shenandoah National Park showcases the geology and high elevation hydrology of the Appalachians, one of the oldest mountain ranges in the world. The high elevation ecosystems and headwaters preserved in the park help contribute to the ecological integrity of valuable cold-water resources downstream. All headwater streams in the park flow to the Chesapeake Bay, the largest estuary in the eastern United States. • Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east.
Current Conditions and Trends	**Conditions** • While there are recent improvements, the current annual average visual range has been reduced from 120 to 25 miles due to air pollution. On severely hazy days, visibility can be 5 miles or less. • Nitrogen deposition is generally unchanged and is difficult to regulate because it comes from diffuse sources. • Air quality is in attainment for human health-based standards for sulfur, nitrogen, and ozone under the Clean Air Act, but is not meeting NPS Air Resources Division benchmarks for ecological health. • The park has impaired waterways and terrestrial ecosystems as a result of acid rain (primarily sulfur). • Thirty-three ozone-sensitive plants are present in the park, and there has been visible injury from ozone documented to trees, tree seedlings, and understory. **Trends** • In spite of increased urban and industrial development in the region, trends for all air pollutants have been improving. • The total number of "haziest days" has been decreasing in the last decade. • From 2003 to 2012, trends for mercury were unchanged, although mercury accumulates over time. • Ozone warrants moderate concern, but the trend is improving. There is an ozone advisory standard operating procedure that guides how the park responds to high ozone days with respect to human health. • From 2003 to 2012, sulfur in wet deposition has significantly improved. It has decreased by more than 50% in response to emissions controls. The primary source of sulfur is coal-fired power plants. • Air quality at Shenandoah National Park has been a significant concern over the past four decades. The park and park partners have made enormous strides in reducing air pollution with continued support from the NPS Air Resources Division.
Threats and Opportunities	**Threats** • Increasing urban and industrial development in the area is impacting air quality and scenic resources in the park. Additional development could also increase acid deposition in the park, which may continue to impact and impair park waterways. • A natural gas power plant is being built in Front Royal. The permitting process is complete (mitigation measures will be used). Park staff works with them regularly to stay engaged with industry. • Nitrogen deposition is generally unchanged and is difficult to regulate because it comes from diffuse sources.

Fundamental Resource or Value	Clean Air
Threats and Opportunities	**Opportunities** • Educate visitors about air quality issues and challenges to promote healthy choices and informed actions and behaviors. • Explore actions the park can take to restore impaired watershed water quality within the park. The air is getting cleaner, but streams are still dirty. • Reduce NPS-generated emissions in the park; implement the climate friendly parks recommendations. Become a model of sustainability. • Work cooperatively with other federal and state air quality agencies and local stakeholders to address air quality impacts in the park from sources of air pollution, through programs such as the regional haze program. • Expand interpretative and educational tools to communicate the connections between clean air, scenic views, night skies, protection of park ecosystems, climate change, and human health.
Existing Data and Plans Related to the FRV	• Air quality in national parks trends (2003–2012) and conditions (2008–2012). • Comprehensive interpretive plan (2001). • Backcountry and wilderness management plan (1998). • Resource management plan (1998). • Wildland fire management plan (1993).
Data and/or GIS Needs	• Analysis of long-term data collected on park ecosystems.
Planning Needs	• Restoration plan for pH-impaired streams.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Clean Air Act of 1977 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13352, "Facilitation of Cooperative Conservation" • Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" • Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 13A: *Environmental Management Systems* • Director's Order 25: *Land Protection* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 32: *Cooperating Associations* • *NPS-75 Natural Resources Inventory and Monitoring Guideline* • Director's Order 75A: *Civic Engagement and Public Involvement* • NPS *Natural Resource Management Reference Manual 77* • NPS *Guidelines for the Treatment of Cultural Landscapes*

Fundamental Resource or Value	Partnerships and Volunteerism
Related Significance Statements	• The Commonwealth of Virginia, private businesses, and local citizens, with the support of the federal government, banded together to advocate for the creation of a national park in the eastern United States through purchase and condemnation of privately owned land. The land acquired by the Commonwealth of Virginia was later donated to the American people and entrusted to the National Park Service to ensure its protection for current and future generations.
Current Conditions and Trends	**Conditions** • Volunteerism and partnerships are currently working well; great coordination between volunteers and the National Park Service, and partner groups and the National Park Service. • Park staff is constantly evaluating and exploring new partnership and volunteer opportunities. • Volunteers are plentiful and are willing to come from long distances. **Trends** • Volunteerism is growing. • Management and coordination of partnerships are improving and strengthening. • Agencywide, there is a growing acceptance and openness to working with external groups. • Relationships with neighboring communities continue to improve and are becoming stable.
Threats and Opportunities	**Threats** • The park long-term partnership and volunteer management strategy. Increasing supply of partner groups and volunteers may surpass actual identified demand for these groups or individuals. Volunteers are not always being used most efficiently (i.e., they are not always given projects that align with the park's major areas of need or matched with projects that align with their strengths and skills). • The majority of the volunteer force is aging. **Opportunities** • Create long-term partnership and volunteer management strategy that outlines how to work most efficiently and effectively with these groups and individuals. • Develop new partnerships targeted at obtaining goals or sharing skills that would remain unmet with current partnerships. • Strengthen relationships, collaboration, and management of existing groups and volunteers. • Identify a range of one-time, recurring, and special volunteer projects suitable for individuals, groups, or organizations. • Strengthen use of social media and other online tools to improve communication with and management of volunteers and collaborations with partner groups. • Improve training for staff who work with partners and manage volunteers. • Improve training for volunteers and partner groups. • Explore new ways to celebrate and recognize partner groups and volunteers.
Existing Data and Plans Related to the FRV	• None identified.
Data and/or GIS Needs	• None identified.
Planning Needs	• Partnership and volunteer management strategy.

Fundamental Resource or Value	Partnerships and Volunteerism
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Volunteers in the Parks Act of 1969 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13352," Facilitation of Cooperative Conservation" • "Resource Protection, Public Use, and Recreation" (36 CFR 2) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 7: *Volunteers in Parks* • Director's Order 17: *National Park Service Tourism* • Director's Order 32: *Cooperating Associations* • Director's Order 75A: *Civic Engagement and Public Involvement*

Fundamental Resource or Value	Evidence of Human Uses of the Land
Related Significance Statements	• Shenandoah National Park provides visitors with the opportunity to explore mountain peaks, hidden hollows, cascading streams, accessible wilderness, and stunning natural beauty within just 90 miles of Washington, DC. The park's outstanding scenery, historic lodges, and broad range of world-class recreation opportunities, including more than 500 miles of hiking trails and the iconic Skyline Drive, provide visitors with a "western park experience" in the east. • Shenandoah National Park is a natural and scenic landscape conserved as a national park after a long history of prior settlement and human use. The park is an outstanding example of nature's regenerative ability and a testament to the benefits of America's conservation ethic. • The first Civilian Conservation Corps camp in a national park system unit was established in Shenandoah National Park; the Corps left an indelible mark on the landscape that still contributes to the unique character of the park. • President Herbert Hoover constructed Rapidan Camp to serve as the summer White House during his presidency (1929–1933) due to its outstanding recreational opportunities and serene mountain setting. The camp, which President Hoover later donated to the federal government as a presidential retreat, was the site of many national and international policy meetings and is now designated as a national historic landmark.
Current Conditions and Trends	**Conditions** • Many cultural resources such as historic home sites, graveyards, and archeogical resources have not been thoroughly studied or documented. **Trends** • LIDAR data are being used to gain a better understanding of these resources. • The cultural layer in GIS has grown significantly over the last couple of years.
Threats and Opportunities	**Threats** • Many cultural resource sites are easily accessed by visitors, which can lead to resource degradation and Archaeological Resources Protection Act violations. • Fire and windstorms threaten log structures and other aboveground structures. • Visitors engaging in illegal activity and inappropriate campsite selection can endanger historic resources, especially historic homesteads. • Many of these resources are located in relatively remote areas, where visitor use is hard to monitor and control. • Many visitors do not realize the park's cultural resources are protected by law and policy. • Climate change may pose threats to these resources, such as increases in erosion and wind/storm damage due to more frequent severe weather events. **Opportunities** • There are many sites in the park that resource staff simply do not have a lot of information about. • Expand collaboration with research groups and universities to better document and understand these resources. • Improve visitor education about the importance of protecting historic resources and the Archaeological Resources Protection Act.
Existing Data and Plans Related to the FRV	• Cemetery database. • Archeological Sites Management and Information System database. • Various archeological compliance reports. • Archeological overview and assessment. • GIS database.

Fundamental Resource or Value	Evidence of Human Uses of the Land
Data and/or GIS Needs	• Finish LIDAR collection. • Cultural resource surveys. • Digitizing of collections.
Planning Needs	• Climate change scenario planning.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the FRV** • Antiquities Act of 1906 • Archaeological Resources Protection Act of 1979 • Archeological and Historic Preservation Act of 1974 • Historic Sites Act of 1935 • National Cemeteries Act • National Historic Preservation Act • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • "National Cemetery Regulations" (36 CFR 12) • "National Register of Historic Places" (36 CFR 60) • "National Natural Landmarks Program" (36 CFR 62) • "National Historic Landmarks Program" (36 CFR 65) • "Curation of Federally-Owned and Administered Archaeological Collections" (36 CFR 79) • "Protection of Historic Properties" (36 CFR 800) • "Preservation of American Antiquities" (43 CFR 3) • "Protection of Archaeological Resources" (43 CFR 7) • "Preservation, Arrangement, Duplication, Exhibition of Records" (44 USC 2109) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 14: *Resource Damage Assessment and Restoration* • NPS *Damage Assessment and Restoration Handbook* • Director's Order 18: *Wildland Fire Management* • NPS *Reference Manual 18: Wildland Fire Management* • *Interagency Burned Area Emergency Response Guidebook* • Director's Order 24: *NPS Museum Collections Management* • NPS *Museum Handbook* • Director's Order 25: *Land Protection* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 28A: *Archeology* • Director's Order 61: *National Cemetery Operations* • NPS *Reference Manual 61: National Cemetery Operations* • Director's Order 64: *Commemorative Works and Plaques* • NPS *Guidelines for the Treatment of Cultural Landscapes* • *The Secretary of the Interior's Standards for the Treatment of Historic Properties*

Analysis of Other Important Resources and Values

Other Important Resource or Value	Historic Structures
Current Conditions and Trends	**Conditions** • The majority of historic structures are in good condition. • Boulder Cabin at Skyland is not in good condition. • Piney River CCC technical building is in poor condition, and the park is evaluating whether it has an appropriate use or should be removed. • The buildings at Lewis Mountain are in moderate condition. **Trends** • Increased opportunities to collaborate with partners in preservation, including the Shenandoah National Park Trust, the NPS Historic Preservation Training Center, the concessioner, and others. • The current concession contract requires significant investment in many of the concession-occupied historic buildings.
Threats and Opportunities	**Threats** • Many structures are deteriorating from lack of maintenance. • Snow, weather, wildland urban interface (fire) are all threats to these structures. • An increase in mean annual precipitation and the increase in storm frequency/intensity projected for the region due to climate change could increase the vulnerability of historic structures (e.g., increase in weathering, flooding, wind damage). **Opportunities** • Opportunity to rehabilitate and use the Pinnacles CCC research lab.
Existing Data and Plans Related to the OIRV	• The Lewis Mountain study, *Under the Sky All of Us Are Free: Segregation and Desegregation in Shenandoah National Park.* • Structural fire plan. • Fire management plan. • Historic structure reports for Massanutten Lodge, Rapidan, Brown House. • Historic furnishing report for Rapidan, Brown House, Massanutten Lodge. • Cultural landscape reports (draft for Rapidan). • Cultural landscape inventory (Big Meadows, Rapidan, Dickey Ridge, Piney River, Elkwallow, Skyland, Lewis Mountain, Headquarters, Appalachian Trail, Skyline Drive, Simmons Gap, Pinnacles Picnic Ground, South River Picnic Ground). • National historic landmark designation (2008).
Data and/or GIS Needs	• Comprehensive condition assessments of assets. • Climate change vulnerability assessment.
Planning Needs	• Big Meadows Wayside historic structures report. • Cultural landscape report for Skyline Drive vistas and overlooks. • Accessibility transition plan.

Other Important Resource or Value	Historic Structures
Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the OIRV** • Americans with Disabilities Act of 1990 • Architectural Barriers Act • Historic Sites Act of 1935 • National Historic Preservation Act • Rehabilitation Act of 1973 • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13327, "Federal Real Property Asset Management" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities" (28 CFR 36) • "Resource Protection, Public Use, and Recreation" (36 CFR 2) • "National Register of Historic Places" (36 CFR 60) • "Protection of Historic Properties" (36 CFR 800) • "Nondiscrimination in Federally Assisted Programs of the Department of the Interior," (43 CFR 17) Subpart B: *Nondiscrimination on the Basis of Handicap"* **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 14: *Resource Damage Assessment and Restoration* • NPS *Damage Assessment and Restoration Handbook* • Director's Order 18: *Wildland Fire Management* • NPS *Reference Manual 18: Wildland Fire Management* • *Interagency Burned Area Emergency Response Guidebook* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* • Director's Order 80: *Real Property Asset Management* • *The Secretary of the Interior's Standards for the Treatment of Historic Properties*

Other Important Resource or Value	The Park Collections
Current Conditions and Trends	**Conditions** • The formal archival collection is in good condition. It includes archeological artifacts, historical artifacts, photos, and negatives. • The park's natural collection is not curated in a manner up to NPS curatorial standards. • The administrative history of the park is well-documented up to the digital age (1990s), after which there are large gaps. The administrative history is currently being re-documented. • There is no current central digital asset management system for digital photos, map data, spreadsheets, digitized archival records, etc. • Digital storage and server space is lacking. **Trends** • National digital record management guidance is lacking in this digital age. • The body of digital collections at the park is growing.
Threats and Opportunities	**Threats** • Lack of backups for digital collections is a concern. • Inability to retrieve digital data from obsolete formats is a problem. **Opportunities** • Make digital records searchable and accessible for staff and for the public. • Obtain better metadata for existing data. • Partner with universities for assistance with digitization of data and making digital records searchable and publicly accessible.
Existing Data and Plans Related to the OIRV	• Collection management plan (2004). • Administrative history (1979).
Data and/or GIS Needs	• Digitizing of collections.

Other Important Resource or Value	The Park Collections
Planning Needs	• None identified.
Laws, Executive Orders, and Regulations That Apply to the OIRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations That Apply to the OIRV** • Antiquities Act of 1906 • Archaeological Resources Protection Act of 1979 • Archeological and Historic Preservation Act of 1974 • Management of Museum Properties Act of 1955 (PL 84-127) • National Historic Preservation Act • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Executive Order 13287, "Preserve America" • Executive Order 13352, "Facilitation of Cooperative Conservation" • "Curation of Federally-Owned and Administered Archaeological Collections" (36 CFR 79) • "Preservation of American Antiquities" (43 CFR 3) • "Protection of Archaeological Resources" (43 CFR 7) • "Preservation, Arrangement, Duplication, Exhibition of Records" (44 USC 2109) **NPS Policy-level Guidance (NPS *Management Policies 2006* and Director's Orders)** • Director's Order 24: *NPS Museum Collections Management* • NPS *Museum Handbook* • Director's Order 28: *Cultural Resource Management* • "NPS-28, Cultural Resource Management Guideline" • Director's Order 28A: *Archeology* • Director's Order 32: *Cooperating Associations* • NPS *Integrated Pest Management Manual*

Identification of Key Issues and Associated Planning and Data Needs

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for a park. Key issues often raise questions regarding park purpose and significance and fundamental and other important resources and values. For example, a key issue may pertain to the potential for a fundamental or other important resource or value in a park to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions that are not directly related to purpose and significance, but which still affect them indirectly. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Shenandoah National Park and the associated planning and data needs to address them:

- **Invasive Species and Wildlife Diseases:** One of the main implications of the park's long, linear boundary is a high degree of exposure and susceptibility to invasive species and nonnative forest pathogens and diseases. Some invasive species and diseases are already present in the park and have had a measurable negative impact on the park's flora and fauna. Those of greatest concern are feral hogs and the emerald ash borer. In addition, chronic wasting disease is documented in the surrounding area and may soon enter the park's ungulate population.
    - Related planning and data needs: feral hog management plan, exotic plant management plan, emerald ash borer management plan, external threats mitigation strategy, climate change scenario planning
- **Urban Growth and Development:** The population of the Washington, DC, metropolitan area continues to grow, creating development pressure outside the park's boundaries. The potential for urban development is highest on the park's east side, as more people seek out bedroom communities within commuting distance to the capital. Increased urban development can result in light and noise pollution, air- and water-quality degradation, and impacts on park viewsheds.
    - Related planning and data needs: boundary access evaluation
- **Impacts from Climate Change:** Climate change may result in a variety of changes in the park, including warmer stream temperatures, loss of native species, more frequent and severe storm events, shifts in the winter ranges of some birds, as well as shifts in the distribution of tree species. Notably, the Shenandoah salamander, which exists nowhere else in the world, is sensitive to climatological fluctuations. Climate change may also impact the park's aquifers, which are the primary source of potable water for park operations and visitors. Presently, the park does not have a comprehensive strategy for adapting to climate change or the resources to thoroughly examine a range of climate change scenarios.
    - Related planning and data needs: climate change scenario planning

- **Visitor Use Management:** The park's visitor use management issues fall into three general categories. First, high use of some iconic destinations—such as Skyline Drive, Whiteoak Canyon, and Old Rag—is resulting in crowding, resource impacts, and safety issues. Old Rag is the most prominent example. This peak is one of the park's most popular summits. In the summer season, hikers sometimes wait up to two hours because of bottlenecks on the scrambling sections on the mountain, and large numbers of people on the summit result in trampling of vegetation.

  The second major issue concerns changing recreation preferences and, consequently, pressure to accommodate new uses in the park, especially mountain biking, bicycling, and paragliding. For instance, bicycling along Skyline Drive has become popular during the last decade, but the narrow, winding road creates high potential for "near-misses" and accidents between drivers and cyclists. This issue is especially acute in the fall season, when the leaves turn brilliant colors and Skyline Drive becomes flooded with cars and congestion.

  The third issue is closely related to the previous two. The park seeks to gain a better understanding of visitor preferences and visitor demographics. This information is vital for providing a high-quality visitor experience and in resource protection. Specific information needs include visitor demographics, their activities while in the park, where they are coming from, and length of stay.

  The park also seeks to understand other audiences in the nearby counties, communities, and metropolitan areas; specific information needs include: what do they know and not know about the park, why they don't visit, as well as what they expect to find (or not find) if planning a visit.

  - Related planning and data needs: backcountry and wilderness management plan update, visitor use management plan for Old Rag, administrative roads plan, recreational use plan for Skyline Drive

- **Aging Infrastructure:** Much of the park's infrastructure is nearing the end of its life cycle, and some assets are likely to fail in the next several years. One major concern is the park's water and sewer systems, most of which are more than 50 years old. The park needs a strategy for allocating limited resources toward assets in the most efficient way possible.

  - Related planning and data needs: asset removal plan, comprehensive condition assessment of assets

- **Boundary Issues:** The linear profile of the park means a high ratio of boundary to interior, which translates into a number of management challenges. Most importantly, virtually none of the park's approximately 350 miles of boundary is marked on the ground. The boundary needs to be accurately surveyed using GIS. Accurate surveying and marking is important because the vast majority of land adjacent to the park is in private hands and boundary disputes can be very difficult and time-consuming to resolve.

  - Related planning and data needs: boundary access evaluation, development concept plan for boundary parking areas, comprehensive boundary survey using GIS

Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, park significance, and park purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, studies, research activities, and analyses may be required to provide adequate knowledge of park resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform park management efforts to secure funding and support for planning projects.

Planning Needs – Where A Decision-making Process Is Needed			
Related to an FRV or OIRV?	**Planning Needs**	**Priority (H, M, L)**	**Notes**
FRV	Backcountry and wilderness management plan update	H	The backcountry and wilderness management plan would identify indicators and thresholds for monitoring and managing visitor impacts on backcountry resources and wilderness character within the park. The plan would identify the maximum amounts and types of visitor use that each area in the backcountry could accommodate while sustaining desired resource conditions and visitor experiences. In addition to managing natural resource damage and high visitor use areas, the plan would also address damage to cultural resources—such as historic home sites in the backcountry—from visitor use. The plan might also establish management actions that would be taken if resource thresholds were met, such as establishing a permit or fee system, site hardening, or designating backcountry campsites.
FRV	Visitor use management plan for Old Rag	H	The visitor use management plan for Old Rag would identify indicators and thresholds for monitoring and managing visitor impacts on resources and visitor experiences on Old Rag. The plan would identify the maximum amounts and types of visitor use that the Old Rag summit and trail can accommodate while sustaining desired resource conditions and visitor experiences. The plan might also identify various management and treatment options to ensure resource impact thresholds are not exceeded, such as signs, education, limiting visitor use, or hardening.
FRV and OIRV	Accessibility transition plan	H	This plan would guide phased developments and maintenance efforts to address all instances in which the park is not in compliance with physical and programmatic accessibility standards and guidelines for people with disabilities.
FRV	Climate change scenario planning	H	This effort would identify potential impacts on park resources and operations from climate change, as well as mitigation and adaptation measures. Climate change scenario planning is a living process that explores a range of plausible climate futures, based on credible science, and identifies the associated impacts and management implications. Outcomes from a scenario planning effort can be integrated in park planning and management to bring appropriate climate change adaptation into those efforts (e.g., resource stewardship strategy, fire management plan, backcountry and wilderness management plan, visitor use management plan).
FRV	External threats mitigation strategy	H	This facilitated process would prioritize an action plan for expending resources to deal with threats to park resources from external factors such as climate change and nonnative species. Several plans identified as lower priority below, such as the feral hog management plan, would be staged following the guidance provided in this strategy.
FRV	Administrative roads plan	H	The existing administrative roads in the park have been expanded and used for various operational needs since the park's establishment. Due to fiscal realities and improved resource understanding, some of these roads may not need to be maintained for administrative use and could possibly be repurposed for other uses such as trails. This planning effort is needed to establish an overall strategy and associated environmental compliance for these roads.

Planning Needs – Where A Decision-making Process Is Needed			
Related to an FRV or OIRV?	**Planning Needs**	**Priority (H, M, L)**	**Notes**
FRV	Cultural landscape report for Skyline Drive vistas and overlooks	H	This report would define the resource conditions such as mowing and tree trimming that contribute to the vistas and overlooks and prescribe specific treatment recommendations to maintain these cultural landscapes.
FRV	Recreational use plan for Skyline Drive	M	This planning effort would explore options for accommodating different and often conflicting use groups on Skyline Drive, such as cyclists and motorists.
Key Issue	Asset removal plan	M	This plan would identify and provide compliance and consultation for the removal of assets no longer needed or that are no longer cost effective to maintain.
FRV	Development concept plan for boundary parking areas	M	The development concept plan would identify specific needs and designs for parking areas at or near the park boundary that provide access into the park. This effort would follow and be informed by the boundary access evaluation.
FRV	Emerald ash borer management plan	M	This plan would provide a comprehensive strategy and environmental compliance for the management of emerald ash borer.
FRV	Parking management plan for Skyline Drive	M	This plan would address parking capacity issues at popular trailheads. The plan would identify alternative strategies to mitigate parking capacity issues, such as expansion of parking areas, using shuttles, and communicating real-time data on parking using digital media.
OIRV	Big Meadows Wayside historic structures report	M	A historic structures report is needed for the Big Meadows Wayside to define historic conditions and prescribe treatment recommendations for maintenance and care.
FRV	Resource stewardship strategy	M	This plan would allow the park to better define desired future resource conditions and develop a comprehensive strategy to reach those desired conditions. It would be developed following the condition assessment and external threats strategy.
FRV	Feral hog management plan	M	This plan would establish a comprehensive strategy and environmental compliance to manage feral hogs in the park.
FRV	Exotic plant management plan	M	This plan would establish a comprehensive strategy and environmental compliance to manage nonnative plants in the park.
FRV	Restoration plan for pH impaired streams	M	This plan would outline the actions that need to be taken to restore pH in impaired streams to natural levels, and also prioritize the sequence in which streams get treated.
FRV	Scenery conservation plan	M	This plan would use data collected from ongoing university research to identify management strategies and collaborations for protection of scenic and historic views.
FRV	Partnership and volunteer management strategy	M	This strategy would outline how to work most efficiently and effectively with these groups and individuals.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or OIRV?	**Data and GIS Needs**	**Priority (H, M, L)**	**Rationale/Notes**
FRV	Resource impacts study at iconic destinations and in wilderness	H	This study would focus on impacts on resources caused by visitors at the most popular summits, trails, and camping areas in the park. Characteristics of visitor use, such as the amount, type, timing, and distribution of visitor activities and behaviors, would be studied. Surveys of visitor preferences and attitudes could also be pursued if necessary. Resource impacts of interest include: compaction of soils, trampling and loss of ground vegetation at campsites and shelters, social trails, trail widening and erosion, wildlife disturbance, and improper disposal of human waste.
FRV	External audience survey	H	The survey should focus on people who are not in the park, such as residents of nearby counties, communities, and urban areas. The survey should ask: What do people know (and not know) about the park; why don't they visit; what expectations do they have if planning a visit?
FRV	Visitor use-related data collection in the Shenandoah Wilderness	H	This survey would examine visitor perceptions, knowledge, skills, abilities, and activities in the Shenandoah Wilderness to inform wilderness management strategies.
FRV	Visitor use surveys along Skyline Drive and other frontcountry areas	H	The off-the-shelf visitor use survey is not meeting the needs of the park and the sample sizes have been very small (120 people in the 2011 survey). A more comprehensive survey should focus on visitors using Skyline Drive during each season of the year. The survey should collect basic demographic information and identify how visitors are using the drive and where they are coming from, as well as their use of services/amenities. Specific information needs: are they entering and exiting through the same place, are they just driving through, where are they stopping, what are they doing, are they getting the services they want.
FRV and OIRV	Digitizing of collections	H	The park collections should be made more publicly accessible. The park could partner with universities to help with the digitization process.
OIRV	Comprehensive condition assessments of assets	H	Existing data are out of date or nearly out of date. Furthermore, many assets are nearing the end of their life cycle. A condition assessment would help the park prioritize financial and staff resources in the maintenance of physical assets.
FRV	Natural sounds inventory	H	The inventory of natural sounds would establish a baseline against which the impacts of future management actions and changing conditions could be evaluated.
FRV	Boundary access evaluation	M	The boundary access evaluation is needed to take a focused look at all boundary access points in the park, both public and administrative, and develop a comprehensive understanding of the function of each, and the associated needs. This effort would also include a GIS mapping component and help inform the development concept plan for boundary parking areas.

Data Needs – Where Information Is Needed Before Decisions Can Be Made			
Related to an FRV or OIRV?	**Data and GIS Needs**	**Priority (H, M, L)**	**Rationale/Notes**
FRV	Finish LIDAR collection	M	The park is currently obtaining new LIDAR data and needs assistance completing LIDAR mapping.
FRV	Dark night skies data collection	M	This data collection effort should help to determine trends in the quality of the photic environment in and around the park.
Key Issue	Comprehensive boundary survey using GIS	M	The park boundary is not marked on the ground, thus it is unclear where the exact boundary line is in some areas. This leads to disputes with neighboring landowners. The survey should use GIS and result in an accurate data set that can be uploaded into ArcGIS and the park atlas.
FRV	Analysis of long-term data collected on park ecosystems	M	The park has collected a great deal of data on its natural resources, but lacks the time or people to analyze the data and draw conclusions.
FRV	Cultural resource surveys	M	Only 1% of park has been surveyed; 500 archeological sites were found in the 1% survey. Further cultural resources surveys should be conducted in areas likely to yield new discoveries, for example, near water sources and known travel corridors through the park.
FRV	Climate change vulnerability assessment	M	Determine the vulnerability of the select natural and cultural resources in the park to various climate change projections.

Part 3: Contributors

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Appendixes

Appendix A: Enabling Legislation and Legislative Acts for Shenandoah National Park

616 SIXTY-NINTH CONGRESS. SESS. I. CHS. 362, 363. 1926.

States, the District of Columbia, and the Canal Zone as the Secretary of War shall determine, and any residue not accepted or rejected on or before July 1, 1928, shall be sold as surplus property as it then is and where it then is, or shall be destroyed, all as the Secretary of War, in his discretion, shall determine; war devices and trophies considered by the Secretary of War as unsuitable for distribution under this Act, may be sold, or otherwise disposed of."

Disposal of residue.

Approved, May 22, 1926.

May 22, 1926.
[S. 4073.]
[Public, No. 268.]

CHAP. 363.—An Act To provide for the establishment of the Shenandoah National Park in the State of Virginia and the Great Smoky Mountain National Park in the States of North Carolina and Tennessee, and for other purposes.

National parks.
Shenandoah, Va., and Great Smoky Mountains, N. C. and Tenn., set apart as, when lands therefor vested in United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when title to lands within the areas hereinafter referred to shall have been vested in the United States in fee simple there shall be, and are hereby, established, dedicated, and set apart as public parks for the benefit and enjoyment of the people, the tract of land in the Blue Ridge, in the State of Virginia, being approximately five hundred and twenty-one thousand acres recommended by the Secretary of the Interior in his report of April 14, 1926, which area, or any part or parts thereof as may be accepted on behalf of the United States in accordance with the provisions hereof, shall be known as the Shenandoah National Park; and the tract of land in the Great Smoky Mountains in the States of North Carolina and Tennessee being approximately seven hundred and four thousand acres, recommended by the Secretary of the Interior in his report of April 14, 1926, which area, or any part or parts thereof as may be accepted on behalf of the United States in accordance with the provisions hereof, shall be known as the Great Smoky Mountains National Park: *Provided*, That the United States shall not purchase by appropriation of public moneys any land within the aforesaid areas, but that such lands shall be secured by the United States only by public or private donation.

Tract in the Blue Ridge, Va.

In the Great Smoky Mountains, N. C. and Tenn.

Proviso.
Lands to be secured only by donation.
Post, p. 966.

Acceptance of title of lands in Shenandoah Park area in Virginia.

SEC. 2. The Secretary of the Interior is hereby authorized, in his discretion, to accept as hereinafter provided on behalf of the United States title to the lands referred to in the previous section hereof and to be purchased with the $1,200,000 which has been subscribed by the State of Virginia and the Shenandoah National Park Association of Virginia and with other contributions for the purchase of lands in the Shenandoah National Park area, and with the $1,066,693 which has been subscribed by the State of Tennessee and the Great Smoky Mountains Conservation Association and by the Great Smoky Mountains (Incorporated) (North Carolina) and with other contributions for the purchase of lands in the Great Smoky Mountains National Park area.

In Smoky Mountain Park area in Tennessee and North Carolina.

National Park Service to administer, etc.

SEC. 3. That the administration, protection, and development of the aforesaid parks shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916, entitled "An Act to establish a National Park Service, and for other purposes," as amended: *Provided*, That the provisions of the Act approved June 10, 1920, known as the Federal Water Power Act, shall not apply to these parks: *And provided further*, That the minimum area to be administered and protected by the National Park Service shall be for the Shenandoah National Park area two hundred and fifty thousand acres and for the Great Smoky Mountains National Park

Vol. 39, p. 535.

Provisos.
Water power Act not applicable.
Vol. 41, p. 1063.
Minimum area specified.

"Wilderness Plan, Joshua Tree National Monument, California", numbered 156–20,003–D and dated May 1976, to be known as the Joshua Tree Wilderness.

(h) Mesa Verde National Park, Colorado, wilderness comprising eight thousand one hundred acres, depicted on a map entitled "Wilderness Plan, Mesa Verde National Park, Colorado", numbered 307–20,007–A and dated September 1972, to be known as the Mesa Verde Wilderness.

Mesa Verde National Park, Colo.

(i) Pinnacles National Monument, California, wilderness comprising twelve thousand nine hundred and fifty-two acres, and potential wilderness additions comprising nine hundred and ninety acres, depicted on a map entitled "Wilderness Plan, Pinnacles National Monument, California", numbered 114–20,010–D and dated September 1975, to be known as the Piunacles Wilderness.

Pinnacles National Monument, Calif.

(j) Saguaro National Monument, Arizona, wilderness comprising seventy-one thousand four hundred acres, depicted on a map entitled "Wilderness Plan, Saguaro National Mounment, Arizona", numbered 151–20,003–D and dated May 1976, to be known as the Saguaro Wilderness.

Saguaro National Monument, Ariz.

(k) Point Reyes National Seashore, California, wilderness comprising twenty-five thousand three hundred and seventy acres, and potential wilderness additions comprising eight thousand and three acres, depicted on a map entitled "Wilderness Plan, Point Reyes National Seashore", numbered 612–90,000–B and dated September 1976, to be known as the Point Reyes Wilderness.

Point Reyes National Seashore, Calif.

(l) Badlands National Monument, South Dakota, wilderness comprising sixty-four thousand two hundred and fifty acres, depicted on a map entitled "Wilderness Plan, Badlands National Monument, South Dakota", numbered 137–29,010–B and dated May 1976, to be known as the Badlands Wilderness.

Badlands National Monument, S. Dak.

(m) Shenandoah National Park, Virginia, wilderness comprising seventy-nine thousand and nineteen acres, and potential wilderness additions comprising five hundred and sixty acres, depicted on a map entitled "Wilderness Plan, Shenandoah National Park, Virginia", numbered 134–90,001 and dated June 1975, to be known as the Shenandoah Wilderness.

Shenandoah National Park, Va.

SEC. 2. A map and description of the boundaries of the areas designated in this Act shall be on file and available for public inspection in the office of the Director of the National Park Service, Department of the Interior, and in the office of the Superintendent of each area designated in the Act. As soon as practicable after this Act takes effect, maps of the wilderness areas and descriptions of their boundaries shall be filed with the Interior and Insular Affairs Committees of the United States Senate and House of Representatives, and such maps and descriptions shall have the same force and effect as if included in this Act: *Provided*, That correction of clerical and typographical errors in such maps and descriptions may be made.

Map and description, public inspection.

SEC. 3. All lands which represent potential wilderness additions, upon publication in the Federal Register of a notice by the Secretary of the Interior that all uses thereon prohibited by the Wilderness Act have ceased, shall thereby be designated wilderness.

Publication in Federal Register.

16 USC 1131 note.

SEC. 4. The boundaries of the following areas are hereby revised, and those lands depicted on the respective maps as wilderness or as potential wilderness addition are hereby so designated at such time and in such manner as provided for by this Act:

Boundary revision.

AREA: SHENANDOAH NATIONAL PARK, VIRGINIA

AUTHORIZATION
Act of May 22, 1926 (P.L. 69-268, 44 Stat. 616), authorized establishment of Shenandoah National Park.

*ACQUISITION AUTHORITY
Act of February 21, 1925 (P.L. 68-436, 43 Stat. 958), authorized Secretary to determine boundaries, recommend lands to be acquired, secure options on those lands, and report to Congress thereon.

Act of May 22, 1926, authorizes acquisition by donation or purchase with donated funds. The act specifically prohibits purchase with appropriated funds.

Act of September 13, 1960 (P.L. 86-775, 74 Stat. 915), authorized acquisition by exchange of the lands described.

Act of October 6, 1992 (P.L. 102-393, 106 Stat. 1763), authorizes the transfer of certain land (9.89 acres) to the Secretary of the Treasury for use as a U.S. Customs Service Canine Training Center.

Act of November 28, 1995 (P.L. 104-59, 109 Stat. 618), required that the Secretary transfer to the State of Virginia, within 180 days from enactment and without reimbursement, the described Shenandoah county roads located in Shenandoah National Park. The purpose of this provision is to permit the State of Virginia to maintain and provide for safe public use of certain roads that the State donated to the United States at the time of the establishment of the park. If any of the subject county roads is withdrawn from general use as a public roadway, all right, title, and interest in the county roads shall revert to the United States.

ESTABLISHED
December 26, 1935

BOUNDARY REVISIONS
Act of June 13, 1939 (P.L. 76-122, 53 Stat. 815), revised the boundary to include additional lands as described.

Act of June 6, 1942 (P.L. 77-593, 56 Stat. 327), revised boundary to include lands acquired for the Shenandoah Recreational Demonstration Project.

Act of June 30, 1961 (P.L. 87-71, 74 Stat. 192), revised boundary to include additional lands (section 1A of the Blue Ridge Parkway).

ACREAGE LIMITATIONS
Act of May 22, 1926, while describing a total park area of 521,000 acres, establishes a minimum area of 250,000 acres for administration, protection, and development of the park.

Act of February 16, 1928 (P.L. 70-33, 45 Stat. 109), reduces the minimum area to 327,000 acres.

Act of February 4, 1932 (P.L. 71-10, 47 Stat. 37), reduces the minimum area to 160,000 acres.

STATUTORY CEILING FOR LAND ACQUISITION
None

AREA NUMBERS
MIS - 4840

*Denotes section revised Revised January 9, 1997

Appendix B: Inventory of Special Mandates and Administrative Commitments

Special Mandates

- **Impaired Waters:** There are 17 Shenandoah waters listed as impaired under the Clean Water Act, which include Jeremy's Run, N. Fork Mormons, East Hawksbill Creek, Flint Run, Gooney Run, Happy Creek, Lower Lewis Run, Meadow Run, One Mile, Paine Run, Pass Run, Rocky Branch, Two Mile Run, Deep Run, E. Branch of Naked Creek, Pass Run, and Hawksbill Creek. Impaired waters are from Virginia Department of Environmental Quality final 2012 305(b)/303(d) water quality assessment report for conditions assessed Jan.1, 2005–Dec. 31, 2010.

- **Outstanding Waterway Designation:** New or increased pollution sources are prohibited in these waters in order to prevent degradation or impairment. Exceptional waters in Shenandoah include Big Run, Doyles River, East Branch Naked Creek, East Hawksbill Creek, Hazel River, Jeremy's Run, N. Fork Thornton River, and Piney River (Exceptional State Waters, Virginia, Administrative Code Title 9 Chapter 25-260-30).

- **Wilderness Designation:** 79,579 acres of Shenandoah National Park are congressionally designated wilderness and managed according to the 1964 Wilderness Act.

- **Appalachian National Scenic Trail:** This national scenic trail runs through Shenandoah National Park. Management and use of the trail is subject to the provisions of the National Trail System Act.

- **National Historic Landmarks:** The park contains several national historic landmarks. The care and use of these landmarks are subject to the provisions of the National Historic Preservation Act.

- **Class I Air Area:** Shenandoah is one of 49 Class I air areas in the national park system.

Administrative Commitments

Name	Agreement Type	Start Date / Expiration Date	Stakeholders	Purpose	Notes
Right-of-Way Easements	Easement	Various / N/A	National Park Service, utility companies	In specific areas throughout the park (e.g., Jarman Gap), deeded easements allow utility companies to maintain and operate electric utility lines in the park.	The utility companies must still obtain permission for pole replacement and tree removal and have a special use permit issued prior to working in the park.
Conservation Easements	Deed	Various / N/A	National Park Service, landowners	Each easement is different, depending on the language of the deed, but they are intended to protect land from development, potentially protecting wildlife habitat, etc.	
Endangered Shenandoah Salamander	Recovery plan with US Fish and Wildlife Service (USFWS)	1994 / N/A	USFWS	Shenandoah's only endangered species is the Shenandoah Salamander.	Endangered status reviewed every 5 years by USFWS.
National Pollutant Discharge Elimination System Permits Related to Waste Water per Clean Water Act	Permit	2012 / 2015	Shenandoah, Virginia Department of Environmental Quality	Provides requirements for park sewage treatment plants.	Typically 5-year permits. Being renewed early due to changes within Virginia Department of Environmental Quality.
Memorandums of Agreement, General Agreements	Agreements	Various	Law enforcement and fire service agencies	The park has many memorandums of agreements with law enforcement and emergency service providers in the surrounding nine counties, including the Virginia State Police.	As an exclusive jurisdiction park, the National Park Service has primary responsibilities for all emergency services in the park, but relies on local cooperators for assistance when needed.
Cooperative Agreement with Potomac Appalachian Trail Club (PATC)	Cooperative agreement	2010 / 2015	PATC	The PATC shares responsibility with the park for maintenance of approximately 250 miles, or nearly 60%, of park trails, including 100 miles of the Appalachian National Scenic Trail. The club is also responsible for backcountry cabin and hut maintenance and operations and the Ridgerunner program.	Currently under revision and will be renewed.

Name	Agreement Type	Start Date / Expiration Date	Stakeholders	Purpose	Notes
Concession Contracts	Contract # CC-SHEN001-13	2/1/2013 / 12/31/2022	DNC Parks and Resorts at Shenandoah	Assist park with management of some visitor services, including managing two park lodges, four wayside restaurants, camp stores, and public showers and providing horse rides.	
Cooperating Association: Shenandoah National Park Association	Cooperating association agreement	10/1/10 / 10/1/15	Shenandoah National Park Association, Shenandoah National Park	Standard NPS agreement between cooperating associations and national park system units. The association sells park-approved educational and commemorative materials.	Shenandoah National Park Association has been the park's dedicated cooperating association for more than 50 years.
Shenandoah National Park Trust	Cooperative agreement	10/1/2007 / 9/30/17	National Park Service, trust employees and directors	The trust is the official fundraising partner for the park, providing annual and multiyear grants for high priority park projects across divisions; supporting projects outside the park that benefit park resources; and building public awareness of the park.	
Federal Aviation Administration (FAA): Vortec Site	Interagency agreement	10/1/08 / 9/30/13	National Park Service, FAA	The Vortec site agreement provides for FAA to maintain and operate a facility on NPS property, as well as providing access and maintenance of the area around the facility.	These agreements have been in place for many years, and the FAA automatically renews them every five years. The Vortec site agreement is out of date and should be updated for more consistent and stronger language relating to access.
FAA: Bucks Elbow	Interagency agreement	10/15/98 / N/A	National Park Service, FAA	The Bucks Elbow agreement provides the FAA access across NPS land to a FAA facility located on Bucks Elbow.	
Nepenthe Land Corporation Right-of-Way	Right-of-way agreement	11/1/11 / N/A	National Park Service, Nepenthe Land Corporation	Agreement grants the right of the National Park Service to establish and maintain a 50-foot-wide ROW to the FAA facility at Bucks Elbow.	

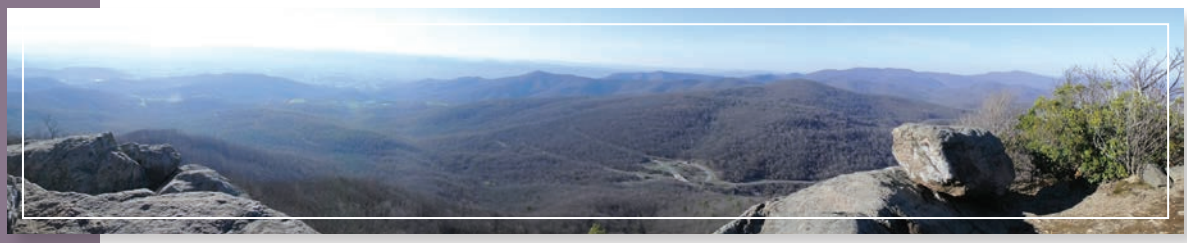
Name	Agreement Type	Start Date / Expiration Date	Stakeholders	Purpose	Notes
Right-of-Way: Utility Transmission Lines Way	Right-of-way permit	Various	NPS, Rappahannock Electric Cooperative, Shenandoah Valley Electric Cooperative, First Energy, Dominion Virginia Power	The permits allow for the companies to operate and maintain a variety of electric utility lines in the park. The size of the ROW is dependent on the type of line.	
Land Lease	Lease	10/1/2006 / 9/30/2016	Steve Lillard, Landowner	Used to provide trailhead parking at Old Rag Trailhead.	Other leases may be put in place as needed to assure public access to park lands.
Emergency Information and Coordination Center (EICC)	None	N/A	NPS	Shenandoah serves as the EICC for the National Park Service; a national commitment to support all NPS units.	An agreement with the Washington Office is being drafted.
Hosted Work Units Agreements	Memorandum of agreement	5/2014 / 5/2024	Northeast Regional Office Employees	These agreements with Northeast Regional Office outline Shenandoah's commitment to provide workspace and other services for Northeast Regional Office employees stationed at Shenandoah.	Agreements with other hosted staff are being drafted.
Blue Ridge Mountain Stewards	Cooperative agreement	2010 / 2015	Park visitors and resources	To improve visitor safety and resource protection on Old Rag Mountain.	
James Madison University	Cooperative agreement	2014 / 2019	State Historic Preservation Office	Cultural resource identification and protection.	
Shenandoah Watershed Assessment Study	Cooperative agreement	2014 / 2015	US Environmental Protection Agency and the National Park Service	To assess cold-water systems and acidification in selected park watersheds.	Shenandoah Watershed Assessment Study was started in 1979.

Appendix C: Basics for Wilderness Stewardship

Wilderness Background Information

In partial fulfillment of a public vision for an Appalachian national park, Shenandoah National Park was established in 1935 by the US Congress as a unit of the National Park Service for the purpose of establishing a public park in the Blue Ridge of Virginia for the benefit and enjoyment of the people. Concurrently, efforts to establish the Appalachian Trail were underway and the long-distance, national trail would eventually be established as a throughway for nonmotorized and nonmechanized travel along the length of the park (though the Appalachian Trail is managed as a separate unit of the National Park Service). Establishment of the public park from populated private land by both donation and condemnation dramatically changed the existing landscape by terminating utilitarian land uses that had been established for hundreds of years. As the former occupants left and visitors began coming, the old farm and timber lands lay fallow and the forest regenerated to fulfill the agency's vision of what a park should look like based on experiences with western parks.

The park's wilderness lands are sometimes referred to as "recycled" wilderness that serve to demonstrate the recuperative powers of natural processes in eastern deciduous Appalachian forest. The land now managed as wilderness was once cleared, homesteaded, farmed, logged, mined, grazed, and burned by generations of European American settlers, but much of the native forest had reestablished by the 1960s, prompting successive park superintendents to advance the idea of establishing a wilderness area under a concept that "re-wilded" landscapes could be worthy of wilderness designation as provided for in the 1964 Wilderness Act. In the years that followed, the wilderness agencies, nonprofit organizations, and Congress engaged in a national debate about what lands were suitable for wilderness. This was largely centered on the US Forest Service interpretation of wilderness as pristine and that bureau's failure to include human modified lands as proposed wilderness in its wilderness studies vs. push-back from wilderness advocates who saw recovered human modified landscapes as worthy of wilderness designation. The differing interpretations of the 1964 Wilderness Act were eventually resolved in 1975 with the passage of PL 93-622, which was untitled but came to be known as the Eastern Wilderness Act. Within wilderness circles, the proposed Shenandoah Wilderness served as an example of the type of formerly used and occupied lands now protected by federal ownership that could be further protected as federal wilderness to provide respite from the urbanized landscapes of the eastern United States and to preserve these recovering landscapes from future exploitation, urbanization, and industrial use.



While the original 1975 Eastern Wilderness Act immediately designated wilderness on lands administered by the US Forest Service, the National Park Service was well underway with its own wilderness study processes. A draft wilderness proposal was first presented to the National Park Service in 1966 by the Potomac Appalachian Trail Club, with a recommendation for 51,500 acres of wilderness. However, The Wilderness Society, National Parks Association, and Sierra Club prepared even more ambitious proposals, with much of the discrepancy between the proposals turning on differing opinions about the degree to which past human land uses affect the suitability of lands as wilderness. This debate hinged primarily on differing interpretation of section 2c of the 1964 Wilderness Act that wilderness "generally appears to have been affected primarily by the forces of nature, with the impact of man's work substantially unnoticeable."

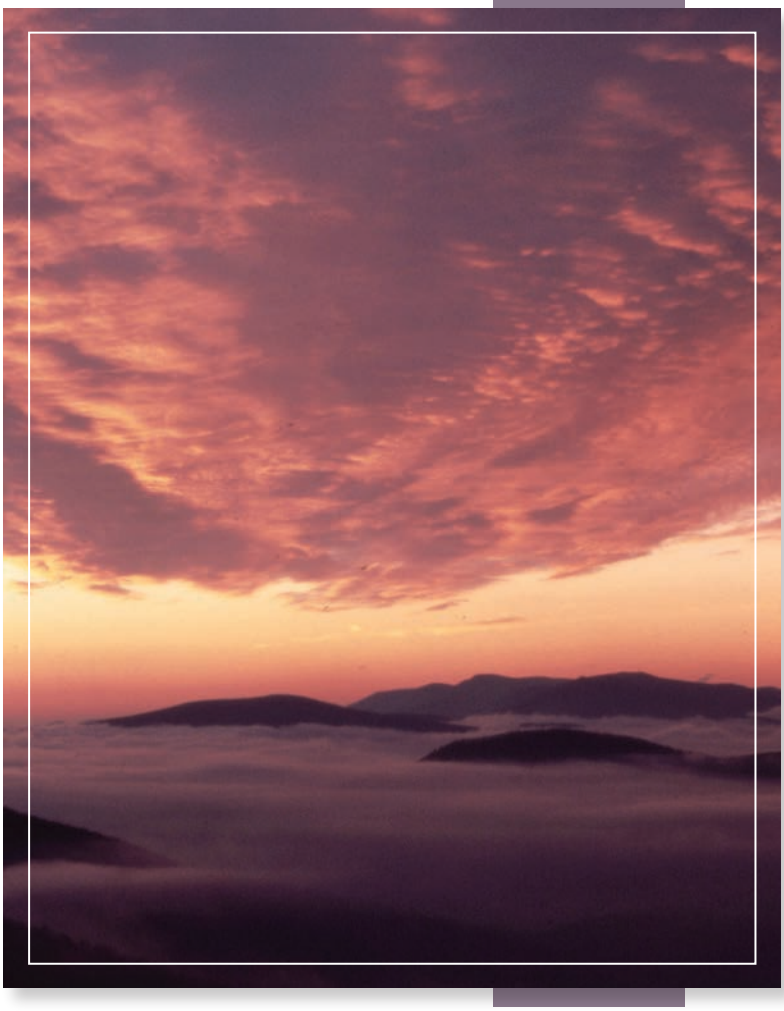
As part of a systematic implementation of the 1964 Wilderness Act, the National Park Service initiated its own wilderness study at Shenandoah in 1966 and in April 1967 released a "preliminary wilderness proposal" to the public that studied nine roadless areas totaling 150,100 acres and recommended six wilderness areas totaling 61,940 acres. During the public involvement process, members of the public as well as local, regional, and national organizations pressured the National Park Service to include more lands in its recommendation as wilderness for a total of 91,000 acres. Again, the debate turned on the extent to which previous land uses compromised the suitability of the land as wilderness, with the focus of this debate centered on roads and access routes as well as the minimum parcel size. Following the public hearings, the National Park Service undertook additional analysis and in 1970 added 14,062 acres to the preliminary proposal while removing 2,722 that had previously been recommended, and a total of 73,280 acres were formally recommended as wilderness by NPS Director George B. Hartzog in October 1970. The completed wilderness study for 14 separate wilderness areas to be administered by the National Park Service was transmitted by the President of the United States to Congress on April 28, 1971, with the following description of the proposed Shenandoah Wilderness:

> *Shenandoah National Park, Virginia – 73,280 acres. The scenic grandeur of the Shenandoah's Blue Ridge is well known. This area is one of the few remaining examples of the vast mountain wildernesses that long ago stood as an obstacle before pioneers pushing westward.*

Congressional consideration of the Shenandoah Wilderness opened when Senator Harry F. Byrd, Jr., introduced S. 2158 for the NPS proposal of 73,280 acres, which was concurrently supported with an identical bill sponsored by Representative Kenneth Robinson. But Senator Frank Church, a powerful champion of the 1964 Wilderness Act and ranking senator who was serving as chairman of the Senate subcommittee during the hearings of May 5, 1972, when the Shenandoah bill was presented, thought the proposal was overly conservative. He expressed opposition to the exclusions that had been drawn around existing or proposed developed sites and the set-back along the park boundaries. Subsequent revisions to the proposed wilderness boundary reduced or eliminated those exclusions and influenced servicewide policy regarding such exclusions. A revised proposal of 80,000 acres was considered by Congress in 1973 as sponsored by Senator Byrd in S. 988. During the subcommittee hearings an alternative proposal for 112,687 acres was presented by three major environmental organizations (the Wilderness society, Sierra Club, and Federation of Western Outdoor Clubs). The departmental and agency testimony held fast to a wilderness proposal to not exceed 80,000, citing the need to preserve opportunities for future park management decisions to have parcels available for trade to resolve boundary issues, address trailhead capacity at popular destinations, and accommodate future utility corridors along roadways.

Eventually the committee favored Byrd's bill, which aligned with the revised NPS proposal, and the full Senate passed it on September 20, 1973, and sent it to the House. The coalition of wilderness supporters rallied for a compromise at 104,000 acres. Opposition to any wilderness proposal surged from Madison County officials and business interests, who wanted both new and increased road access as well as future water impoundments on lands proposed as wilderness and expressed concerns about increased fire hazard resulting from the closing of fire roads in the proposed wilderness. The 1974 congressional session closed without passage of a Shenandoah wilderness act, but public debate escalated with increasingly polarized views of wilderness in general, and the implications of Shenandoah wilderness in particular, with the National Park Service generally in the middle. Exchanges between Senator Byrd's staff and NPS staff at both the park and the Washington office indicate that Senator Byrd was leading the way toward an amendment to designate travel corridors within the NPS wilderness proposal in order to partially placate some of the opposition to his wilderness bill. Meanwhile, the bureau stood firm that such delineations on a map were unnecessary, and in fact would hamper future park managers, because section 4c of the Wilderness Act provides for adequate managerial latitude to maintain some areas as corridors where it is determined to be the minimum requirement for the administration of the area as wilderness. Again Senator Byrd introduced an amended wilderness bill in 1976, S. 885, which the National Park Service supported, and it was passed by the Senate on April 7, 1976. This bill appeared to stall out in the House of Representatives for a few months over the opposition from the coalition of wilderness organizations that the corridors created a "mutilated wilderness." Then, with little advance warning or fanfare, the Shenandoah Wilderness proposal was rolled up with 12 other NPS wilderness proposals, and passed as an omnibus act by the House on Saturday, October 4, 1976, the day before the session ended, thus abruptly terminating a decade of political wrangling, map drawing and redrawing, and public debate over the Shenandoah Wilderness.

Eventually, wilderness was designated within Shenandoah National Park in 1976 (PL 94-567), establishing 79,019 acres as wilderness and 560 acres as potential wilderness additions until such time as existing nonconforming uses were terminated. The superintendent at the time of designation, Robert Jacobsen, set forth the following policy of not only preserving but also improving the wilderness character of the newly designated lands: "We recognized, through its relatively small size, its already established levels and patterns of visitor use, and the presence of immediately adjacent nonconforming land use activities, that our wilderness area was not of the highest order—and immediately adopted a nondegradation policy . . . and while our wilderness is not supreme, we will not allow its primeval character, and its opportunities for solitude, inspiration, and physical and mental challenges to decline. Furthermore, we will strive, and might be able, to improve its overall quality." Removals of numerous facilities and administrative reassignment of special access permits to other nonwilderness roads enabled the park to administratively convert the entire 560 acres of potential wilderness addition to designated wilderness with the publication of a *Federal Register* notice in September 1978. With all potential wilderness additions converted into wilderness, the designated wilderness now totals 79,579 acres in 3 areas and 11 separate parcels.



Wilderness Character Narrative

Overview

> *A wilderness character narrative is a positive and affirming description of what is unique and special about this wilderness. The narrative is structured to give a brief overview of the geopolitical setting of the wilderness area, followed by narrative descriptions of each quality of wilderness character, including what preserves or exemplifies that quality in that place as well as what degrades that quality. In many cases, the same resource or action may serve to preserve one quality of wilderness character while concurrently degrading another quality of wilderness character. This is an entirely acceptable situation that reflects the complex realities of wilderness. The framework by which these qualities are defined, and what indicators or measures are used to determine preservation or degradation of that quality, follows.* (Keeping it Wild in the National Park Service: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring, *which is a component of Directors Order/Reference Manual 41:* Wilderness Stewardship)

Shenandoah National Park straddles the long, rocky Blue Ridge of the Appalachian Mountains, its ancient rock knobs and stony backbone rising 3,000 feet above the Virginia Piedmont to its east and the Shenandoah Valley to its west. This forested ridgeline was first occupied by American Indians some 11,000 years ago who seasonally visited these highlands to hunt and gather. The Blue Ridge, which dominates the horizon for miles, served as a formidable obstacle to westward exploration in the 17th century and later as a home for generations of European Americans who farmed, logged, grazed, and mined nature's bounty in the 18th and 19th centuries. Established in 1935, Shenandoah National Park terminated most of those historic land uses and instead focused on providing recreational opportunities and allowing the natural recovery of the forested landscape. By the mid-1960s, the reclaimed wildlands were being considered for wilderness designation under the 1964 Wilderness Act but the suitability of re-wilded versus pristine lands for wilderness inclusion was the subject of national debate. With the passage of PL 93-622 in 1975, known as the Eastern Wilderness Act, the US Congress confirmed that indeed those lands previously logged, farmed, mined, and otherwise used by humans could be included in wilderness provided that their condition at the time of designation "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (see section 2c, the Wilderness Act). And, thus, wilderness was designated within Shenandoah National Park in 1976 (PL 94-567), establishing 79,019 acres as wilderness and 560 acres as potential wilderness additions until such time as existing nonconforming uses were terminated. Those uses were quickly terminated or reassigned to nonwilderness lands, and the potential wilderness additions were converted to wilderness in 1978. Today, Shenandoah Wilderness now totals 79,579 acres in 3 areas and 11 separate parcels that share boundaries within the park with backcountry lands, frontcountry lands, the Appalachian National Scenic Trail, Skyline Drive, and other roads. Along the exterior park boundary, the wilderness abuts nonfederal lands used for residential and agricultural purposes with some small areas adjoining a state wildlife management area and the Appalachian National Scenic Trail.

In 2013, the park hosted 41,419 overnight stays in the backcountry (down from previous years because of the government shutdown), of which about 20%–30% are estimated to occur in the Shenandoah Wilderness. Additionally, the Shenandoah Wilderness is a popular day use destination, owing in part to its close proximity and ease of access to large population centers, and numerous points of access to a well-established trail system with many options for one way and loop travel routes. Numerous roads terminate at the park boundary as trailheads, providing an alternative to the paved scenic byway known as Skyline Drive and the well-worn Appalachian National Scenic Trail, which crisscross each other along the length of the park to provide a continuous conduit for north-south travel and a host of trailheads.

Shenandoah National Park's boundary is more than 370 miles in length and approximately 95% of adjacent lands are privately owned. These adjacent lands contain a patchwork of residential and agricultural land uses and their proximity to the boundary contributes to the sights, sounds, and smells visitors may experience when travelling through some areas of the Shenandoah Wilderness.

A 2011 frontcountry visitor use study found that most respondents reported these wilderness-related activities as either important or extremely important to their park visit: experience wilderness, view plants and animals, enjoy solitude, and enjoy sounds of nature. While wilderness is a minority of its acres and much of the wilderness is easily accessible, the park is highly valued for its wilderness opportunities.

Natural

> *Wilderness ecological systems are substantially free from the effects of modern civilization. This quality is preserved or improved, for example, by controlling or removing nonindigenous species or restoring ecological processes. This quality is degraded by the loss of indigenous species, occurrence of nonindigenous species, alteration of ecological processes such as water flow or fire regimes, effects of climate change, and many others.*

The ancient rocks of the Appalachian Mountains, some more than a billion years old, have been metamorphosed, intruded, uplifted, chemically weathered and eroded to give rise to a range of elevation, slopes and aspects, rocks, and soils. This ancient rocky ridgeline, buttressed by lateral ridges and sylvan hollows, is veneered with mature, primarily second-growth forest, a product of abundant precipitation and a long growing season. Oak-hickory and oak-pine and other hardwood forest communities dominate most of the park with smaller areas of rock barrens and boulder fields, woodland, and meadow communities. Remnants of boreal forests, a reminder of the last glacial reach from the north that stopped short of this location, are found at higher elevations including several rocky knobs that punctuate the forest canopy and two that rise to lofty heights of 4,000+ feet above sea level. These isolated, high elevation communities support rare and endemic species such as the Shenandoah salamander, an animal whose entire range lies wholly within high elevations in the park.

Forested landscapes are composed of more than 1,400 different vascular plant species and thousands of nonvascular plant species. There are also hundreds of springs and seeps and more than 90 free-flowing headwater streams whose cold-water cascades support remnant populations of native aquatic species, including brook trout that have largely been extirpated elsewhere in the Appalachian region. In sum, the park's diverse forest, open, and aquatic habitats support more than 200 bird, 50 mammal, 51 amphibian and reptile, and 39 fish species, including several federally endangered and state threatened species of animals and plants. Invertebrate inventories are rare but aquatic invertebrate inventories have documented more than 240 species in park waters. High elevation terrestrial inventories found more than 750 species to include at least 7 state rare species, including butterflies.

The natural quality of the Shenandoah Wilderness is threatened by the pervasive effects of the surrounding urbanized and agricultural landscape, which serve to isolate the Blue Ridge Mountains and restrict movements of some large ranging mammals and also serve as sources of nonnative species and air pollutants. In addition, the past land use history of farming, logging, homesites, grazing, and mining continues to echo through the park's regenerated forest, and is found in the cut stumps, road traces, minor impoundments, old fence lines, and scattered prospects that dot the landscape. Thus, while much of the native flora and fauna continue to persist in the park, the species composition, distribution, and abundance are probably altered by past or present human activities. Nonnative forest pests, both invasive plants and insects (e.g., gypsy moth, hemlock woolly adelgid, emerald ash borer) and disease agents, alter the forest community and serve to fragment the forest canopy to the detriment of interior woodland species, such as neotropical migrant birds. About 360 nonnative plant species are found in the park, including 41 that are considered invasive.

Altered fire regimes, both through fire suppression and prescribed fire, have also affected the forest communities. Historical records indicate that the Blue Ridge province was the most fire prone area in the central Appalachian Mountains of Virginia and West Virginia from natural ignitions (Lafon et al. 2007)[1]. In an analysis of 12 fire scar studies, Brose, Dey, and Waldrop (2014)[2] found the pre-European settlement mean fire return interval in the Appalachians every 5.8 years. Other Appalachian studies produced an average of 7 years. The post-European settlement mean fire return interval was found to be every 5.3 years. After the inception of fire control policies in the 1900s, the modern fire return interval in the Appalachian's was found to be every 32.4 years (Brose, Dey, and Waldrop 2014).

Fire season in the Appalachians is typically bimodal and occurs in the spring (February 15 to May 15) and fall (October 15 to December 15), however fires can occur at any time when weather conditions, dry fuels, and an ignition source align. The fire history of the park, dating back to the 1930s, indicates many fires occurring on dry southwest facing slopes, particularly in the South District, however during dry years fires are able to burn into topographically moist sites. Brose, Dey, and Waldrop (2014) found that the vast majority of the historic fire studies indicate these fires occurred in the dormant season. However, Cohen et al. (2007)[3] found that xeric pine oak heath forests can ignite from lightning strikes in the summer and the resultant fires can burn for weeks, even with precipitation, covering large landscapes.

1. Lafon, C. W., J. O. Waldron, D. M. Cairns, M. D. Tchakerian, R. N. Coulson, and K. D. Klepzig. 2007. "Modeling the Effects of Fire on the Long-Term Dynamics of Yellow Pine and Oak Forests in the Southern Appalachian Mountains." *Restoration Ecology* 15(3):400–411.
2. Brose, Patrick H., Daniel C. Dey, and Thomas A. Waldrop. 2014. *The Fire—Oak Literature of Eastern North America: Synthesis and Guidelines*. Gen. Tech. Rep. NRS-135. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 98 p.
3. Cohen, D., B. Dellinger, R. Klein, and B. Buchan. 2007. "Patterns in Lightning-Caused Fires at Great Smoky Mountains National Park." *Fire Ecology* Special Issue 3(2):68–82.

Prior to 1750, fires intentionally set by American Indians were used to achieve a variety of results, including clearing land for agriculture, assisting in the management of favored vegetation, clearing routes of travel, herding game, and even waging war on neighboring tribes (Abrams 1992, Brose et al. 2001)[4,5]. From 1750–1930, increased European settlement augmented the frequency and intensity of disturbances in and around the park, maintaining and, perhaps, expanding the oak-hickory and pine component in the forests (Brose et al. 2001). These fires probably varied in intensity and exerted a considerable influence upon vegetative composition. One effect may have been creating a forested landscape in which oak and hickory and, in some areas, pine were a dominant component of forests (Abrams 2005)[6]. Numerous fire studies have found fire scarring almost ubiquitous in stands of table mountain pine throughout the Appalachians. Since 1930, however, effective and active fire suppression effort in the United States has probably limited the regeneration of oak and pine forests at Shenandoah National Park, as well as central and southern Appalachia. Moreover, fire intolerant and shade tolerant mesic tree species now dominate the mid and understory strata in these dry oak and pine forest communities. The park has begun conducting prescribed fires in dry oak and pine ecosystems to restore the ecological resilience and integrity of these forested communities. Brose et al (2013)[7] analyzed 32 prescribed fire studies conducted in mixed oak forests and found that single prescribed fires conducted in a closed canopy stand have little impact on regenerating oak and pine. Multiple burns have been shown to increase regeneration especially when followed by a canopy disturbance. Growing season fires have been shown to achieve the desired reduction in crown density faster than dormant season prescribed fires. Prescribed fires at Shenandoah will be implemented during the dormant and growing season with a targeted rotation of every 5–7 years. The park is also authorized in the 2006 fire management plan to manage a wildfire for multiple objectives, which may include natural resource benefit.

Air pollution originating from nearby and distant urban sources impacts biophysical processes: Acid deposition, especially in the southern areas of the wilderness, alters stream chemistry. Elevated ozone damages sensitive plant species. Increased particulates reduce visibility from the park's iconic scenic viewpoints, both from within wilderness looking out as well as from outside looking toward the wilderness.

Climate change is warming cold-water streams to the detriment of native brook trout, altering the seasonal rhythms of plants and animals, which disrupts ecological interactions, and increases the probability of intense weather events (e.g., flooding, droughts, etc.). In high-use destinations in wilderness, visitor impacts have also altered local resources by trampling, improper disposal of human waste, littering, illegal campfires, and other depreciative visitor behaviors.

4. Abrams, M.D. 1992. "Fire and the Development of Oak Forests." *BioScience*. 42: 346–353.
5. Brose, P.H., T.M. Schuler, D.H. Van Lear, and J Berst. 2001. "Bringing Fire Back: The Changing Regimes of the Appalachian Mixed-Oak Forests." *Journal of Forestry*. 99(11): 30–35.
6. Abrams, Marc D. *Northern Journal of Applied Forestry*, Volume 22, Number 3, September 2005, pp. 190–196(7)
7. Brose, Patrick H. Daniel C. Dey, Ross J. Phillips, and Thomas A. Waldrop. 2013. "A Meta-Analysis of the Fire-Oak Hypothesis: Does Prescribed Burning Promote Oak Reproduction in Eastern North America." *Forest Science*. 59(3): 322–334.

Untrammeled

Wilderness is essentially unhindered and free from the intentional actions of modern human control or manipulation. This quality is influenced by any activity or action that intentionally controls or manipulates the components or processes of ecological systems inside wilderness. It is supported or preserved when such management actions are not taken. It is degraded when such management actions are taken, even when these actions are intended to protect resources, such as spraying herbicides to eradicate or control nonindigenous species, or reducing fuels accumulated from decades of fire exclusion.

The untrammeled quality is preserved by the exercise of humility and restraint by park managers to not intervene in natural biophysical processes. Modern trammeling of the Shenandoah Wilderness is undertaken judiciously and is mostly focused on removal of developments or impacts of past land uses (pre-wilderness) to restore the undeveloped quality, or intervention to protect or restore natural processes. For the most part, forest succession continues unaided by the National Park Service; plants and animals live, reproduce, and die, soil nutrients cycle, and watershed processes continue unimpeded and undirected by park managers.

The untrammeled quality is degraded by some ongoing resource stewardship activities, such as widespread monitoring and control of invasive plants and forest pests, and fire management. On average, six fires are suppressed annually and one prescribed fire is ignited, totaling 2,283acres annually on average. The vast majority of these acres are from wildfires with 2,225 acres burned each year. Some of the fires occur wholly or partially on wilderness lands and thus represent some deliberate alteration of fire regimes. It is also degraded by activities not authorized by the federal land manager, such as illegal plant and animal harvest (e.g., ramps, ginseng, deer poaching, etc.), unauthorized fish stocking, illegal tree removal, and illegal pet dumping.

Undeveloped

Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. This quality is influenced by what are commonly called the "Section 4(c) prohibited uses" or "nonconforming" uses, which are the presence of modern structures, installations, habitations, and the use of motor vehicles, motorized equipment, or mechanical transport. This quality is preserved by the absence of structures and installations, and refraining from these prohibited uses. It is degraded by the presence of structures and by prohibited uses, whether by the agency for administrative purposes, by others authorized by the agency, or unauthorized uses. (Note that structures and installations related to visitor use and recreation are included in the Solitude Quality rather than the Undeveloped Quality.)

While much of the wilderness was previously settled and used by humans, most of the land has been re-wilded with the passage of time since park establishment and wilderness designation. Modern, nonrecreational installations are relatively rare in the Shenandoah Wilderness. Nonmotorized and nonmechanical tools are used for routine, nonemergency work such as maintaining trails and signs, or for the installation or maintenance of administrative installations.

The undeveloped quality is degraded by the remnants of past development on the lands that are now in wilderness. Still visible in some places in the form of rock walls, foundations, road traces, forest clearings, cemeteries, and stone chimneys are the remains of the old settlements that once occupied the landscape. There are also administrative installations found within the wilderness, such as meteorological stations, permanently marked monitoring plots, wildlife cameras, minor fencing, and collared wildlife.

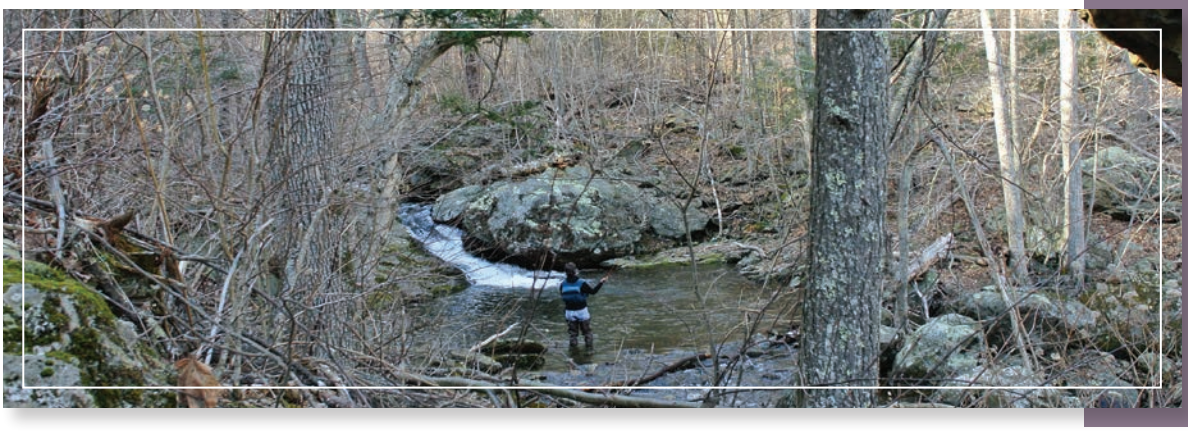
This quality is also degraded by the use of motor vehicles, landing of aircraft, motorized equipment, or mechanical transport. Such equipment is sometimes authorized for use during emergencies such as search and rescue and wildland fire, typically at a frequency of a dozen incidents annually, though minimum impact techniques are used as often as possible and practical for these activities. Actions not authorized by federal land managers sometimes occur, such as motorized equipment use during initial action on wildland fire incidents by state and local cooperators and motorized vehicle incursions from adjacent lands.

Solitude or Primitive and Unconfined Recreation

Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation. This quality is primarily about the opportunity for people to experience wilderness, and is influenced by settings that affect these opportunities. This quality is preserved or improved by management actions that reduce visitor encounters, signs of modern civilization inside wilderness, agency-provided recreation facilities, and management restrictions on visitor behavior. In contrast, this quality is degraded by management actions that increase these. This quality has internal tension between the concept of solitude and the concept of unconfined, and thus the same action taken to preserve solitude will unavoidably serve to confine some aspect of recreation. This apparent conflict serves to highlight the complexity of wilderness recreation.

Rugged mountain topography and verdant forests provide for feelings of solitude throughout much of the wilderness, and this landscape is wholly accessible to the intrepid visitor due to the allowance for off-trail travel and dispersed camping that allows visitors to wander at will. In contrast, a vast trail network serves to both accommodate visitor access to wilderness and to decrease solitude due to the higher probability of encounters on the trail and proliferation of impacted backcountry campsites along logical or popular routes of travel. Destination sites, such as Old Rag, attract large numbers of day users into wilderness settings, which can degrade the feeling of solitude. The high elevation portions of the wilderness provide opportunities for scenic vistas for miles around, including occupied and modified areas outside of wilderness, which serve to degrade the feeling of solitude. Similarly, Skyline Drive runs the length of the park along the top of the ridge, and its developed areas serve as a pervasive source of noise and, to a lesser extent, light pollution that is sometimes observable from within wilderness. Deterioration of night sky visibility is primarily caused by ambient light from the surrounding residential and agricultural landscape beyond park boundaries. Sounds and lights from passing vehicles travelling along Skyline Drive also may occasionally be observable from some areas within wilderness and degrade the sense of remoteness. The long, linear nature of the park's geography, combined with increasing developments along the park boundary in some locations, further degrades the sense of remoteness from occupied and modified areas outside the wilderness because nonwilderness is always relatively close, sometimes within sight or sound of wilderness users.

There are abundant opportunities for primitive and unconfined recreation, including dispersed camping and the freedom to choose your itinerary, but such opportunities are often pursued in the company of others, given the proximity of this wilderness to the densely populated eastern seaboard. To minimize conflicts between groups, some regulations are in place to help minimize impacts on other visitors and park resources. Such restrictions include permit requirements, length of stay restrictions, areas closed to camping, prohibitions on campfires, and stock restrictions. More than 500 miles of trail are actively maintained in the park, a portion of which are in wilderness, with numerous wayfinding installations, well-marked trail crossings, and some bridges to aid in stream crossing and to prevent resource damage, which also serve to degrade the sense of primitive and unconfined recreation.



Other Features of Value

Wilderness preserves other tangible features that are of scientific, educational, scenic, or historical value. This quality is based on the last clause of section 2(c) of the Wilderness Act which states that a wilderness "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." This quality captures important elements of the wilderness that are not covered in the other four qualities, such as cultural or paleontological resources. This quality is preserved or improved when these resources are preserved and their loss or impacts on such features degrade this quality of wilderness character.

The story of Shenandoah Wilderness is one of wilderness reclaimed. That is, virtually all of the lands that are now in wilderness previously supported human use and settlement in both prehistoric and historic times.

The park has the highest number and oldest documented archeological sites in the Virginia Blue Ridge. Some high-elevation sites dating back to 11,000 years ago provide paleoarcheological evidence of seasonal resources that framed settlement throughout prehistory, providing important food sources as well as stone sources for tool making. The highest elevation prehistoric pottery in Virginia, dating to AD 1000, has been recovered at Big Meadows, reinforcing the interpretation of the site as an important location in regional social systems. Thus, the prehistoric archeological resources in Shenandoah Wilderness have scientific, educational, and historic value.

In historic times, hunters and trappers gathered the biological riches of the mountains and were soon followed by several generations of European American settlers who lived in scattered homesites and rural communities in the Shenandoah Mountains. Thus, the vast majority of the parks lands and wilderness have been homesteaded, farmed, logged, grazed, or mined. With the establishment of the park, approximately 450 families were relocated, leaving behind ample evidence of their mountain lifestyle, which the verdant eastern forest has been reclaiming for decades. In addition to the people who lived there year-round, prior to park establishment private vacation resorts and summer homes were built to accommodate short-term visitors who wished to enjoy the healthful mountain landscape and to escape the heat of summer. Evidence of these activities is still visible in many locations, though weathering and forest regrowth make them increasingly obscure. There are several historic homesites in wilderness, mostly in the central and north districts of the park. Most have not been formally evaluated for historic significance, but they could be nationally or regionally significant, and most have important historic value as they relate to park establishment. As generations lived, worked, and died here, there are also 28 cemeteries in the park. These and other remnants of the recent past in Shenandoah Wilderness have historic value in that they convey, embody, or stimulate a reaction to the past and can serve as a thought-provoking contrast to the unpeopled concept of wilderness.

Cultural sites are degraded primarily by looting. The archeological sites are often difficult to detect and thus are not likely to be looted by casual visitors. In contrast, many of the historic sites are quite noticeable and over the years many of the most choice and easily transportable items have been carried off site by park visitors. Looting is a permanent loss that degrades the historical, educational, and scientific values of wilderness.

Wilderness Planning Needs

This section describes the relationship between some of the planning and data needs identified in the park foundation document and wilderness character in order to better inform future wilderness stewardship investments and decisions. Where applicable, the wilderness character framework, and associated qualities and indicators, have been noted for each data need.

Plan Name	Opportunities to Integrate Wilderness Character
Backcountry and wilderness management plan update	In addition to systematically addressing wilderness issues related to park operations, the wilderness and backcountry stewardship plan provides an opportunity to establish or refine a wilderness character monitoring program consistent with national standards (see NPS *Reference Manual 41: Wilderness Stewardship*) to track each quality of wilderness character over time. The *Wilderness Stewardship Plan Handbook* (part of RM-41) provides many details about where and how to integrate wilderness character into a wilderness stewardship planning process.
Visitor use management plan for Old Rag	As a high-use destination in both backcountry and wilderness, this planning effort focused on Old Rag provides an opportunity to consider tradeoffs between and within the qualities of wilderness character in order to inform visitor use management. For example, visitor use decisions relate directly to several indicators under the solitude or primitive and unconfined recreation quality, particularly "remoteness from sights and sounds of people inside the wilderness" and "management restrictions on visitor behavior." Management actions considered may also relate to preserving the natural quality of wilderness character where visitor use has impacted natural resources/processes. It may also relate to the undeveloped quality where new developments are proposed to administer the area as wilderness.
External threats mitigation strategy	Where those external threats and/or proposed management actions impact wilderness, the qualities of wilderness character can be one factor to consider in prioritizing future planning efforts. Likewise, a wilderness character monitoring program can be used to track changes in the qualities of wilderness character, including sources of degradation that originate from external threats.
Boundary access evaluation	The size and location of boundary access points that serve as trailheads for wilderness users provides an opportunity to thoughtfully manage visitor use through facility design considerations. Such decisions relate directly to the solitude or primitive and unconfined recreation quality.
Resource stewardship strategy	The resource stewardship strategy can be used to establish or integrate a wilderness character monitoring program in the resource condition summary tables. Likewise, the comprehensive strategies provide an opportunity to improve wilderness character through thoughtful planning.
Feral hog management plan	Overall, the implementation of these resource-specific management plans would be expected to improve the natural quality of wilderness character, though some specific management actions may degrade other qualities of wilderness character, particularly the untrammeled quality and perhaps the undeveloped quality (e.g., scientific instrumentation, wildlife collars, etc.). The impact analysis for such plans can use the framework of wilderness character to analyze the short-term and long-term trade-offs between the qualities of wilderness character.
Exotic plant management plan	
Restoration plan for pH-impaired streams	
Emerald ash borer management plan	

Data and GIS Needs	Opportunities to Integrate Wilderness Character
Resource impacts study at iconic destinations and in wilderness	Such impacts can be framed by the qualities of wilderness character in order to inform future planning/management actions as well as wilderness character monitoring efforts. Such resource impact studies can provide baseline or point-in-time data for the park's wilderness character monitoring effort. Applicable wilderness quality indicators include plant and animal species and communities, physical resources, and biophysical properties.
Visitor use-related data collection in the Shenandoah Wilderness	This information relates directly to the solitude or primitive and unconfined recreation quality and informs this indicator: remoteness from sights and sounds of people inside the wilderness.
Dark night skies data collection	This data collection relates directly to both the natural quality and the solitude or primitive and unconfined recreation quality and informs this indicator: remoteness from occupied and modified areas outside the wilderness.
Analysis of long-term data collected on park ecosystems	This information relates directly to the natural quality and informs these indicators: plant and animal species and communities, physical resources, and biophysical properties.
Cultural resource surveys	This information relates directly to the other features of value quality.

Appendix D: Past and Ongoing Park Planning and Data Collection Efforts

Name	Type	Published
Significance of Headwater Streams and Perennial Springs in Ecological Monitoring in Shenandoah National Park	Data Report	2013
Synthesis and Interpretation of Surface-Water Quality and Aquatic Biota Data Collected in Shenandoah National Park, Virginia, 1979–2009	Data Report	2013
Weather of Shenandoah National Park Mid-Atlantic Network Summary Reports [2012, 2011, 2010]	Data Report	2013
Aquatic Macroinvertebrate Monitoring in Shenandoah National Park 2009 Summary Report	Data Report	2012
Characterization of Major-Ion Chemistry and Nutrients in Headwater Streams Along the Appalachian National Scenic Trail and Within Adjacent Watersheds, Maine to Georgia	Data Report	2012
Fish Monitoring in Shenandoah National Park 2010 Summary Report	Data Report	2012
Forest Vegetation Status in Shenandoah National Park Long-term Ecological Monitoring Summary Report 2003–2011	Data Report	2012
NPS Abandoned Mineral Lands Inventory and Assessment Shenandoah National Park	Data Report	2012
Prioritizing Forest Communities and Areas for the Use of Prescribed Fire at Shenandoah National Park	Data Report	2012
Shenandoah National Park Visitor Study Summer and Fall 2011 [previous visitor study conducted in summer 2001 with associated report published in 2002; first visitor study conducted in summer and fall 1987 with associated report published in 1988]	Data Report	2012
Soils and Foundation Report Rehabilitation of 7 Historic Overlooks Along Skyline Drive Page, Madison, Shenandoah, Rappahannock, Greene, and Warren Counties, Virginia	Data Report	2012
Virginia Trout Stream Sensitivity Study 2010 Survey Results for Shenandoah National Park	Data Report	2012
Weather and Climate Monitoring Protocol Eastern Rivers and Mountains Network and Mid-Atlantic Network	Data Planning	2012

Name	Type	Published
Rock Outcrop Management Plan Environmental Assessment/Assessment of Effect	Planning Document	2012
Cultural Landscapes Inventories: Elkwallow, Simmons Gap, and Skyline Drive Landscape	Data Report	2011
Evaluation of the Sensitivity of Inventory and Monitoring National Parks to Acidification Effects from Atmospheric Sulfur and Nitrogen Deposition Mid-Atlantic Network (MIDN)	Data Report	2011
Evaluation of the Sensitivity of Inventory and Monitoring National Parks to Nutrient Enrichment Effects from Atmospheric Nitrogen Deposition Mid-Atlantic Network (MIDN)	Data Report	2011
Shenandoah National Park Forest Vegetation Monitoring Protocol Version 2.3	Data Planning	2011
Shenandoah National Park Traveler Information Coordination Study	Planning Document	2011
A Conceptual Basis for Monitoring Vital Signs: Shenandoah National Park	Data Planning	2010
Aquatic Critical Loads and Exceedances in Acid-Sensitive Portions of Virginia and West Virginia Results of Southeastern Multiagency Critical Loads Research Project	Data Report	2010
Cultural Landscapes Inventories: Skyline Drive – North District, Central District, and South District	Data Report	2010
Mid-Atlantic Exotic Plant Management Team Exotic Vegetation Management Annual Reports [2010, 2009, 2007, 2006]	Data Report	2010
Shenandoah National Park Phenology Project – Weather Data Collection, Description, and Processing	Data Report	2010
Shenandoah National Park Weather [reports for 2009, 2008, and 2007]	Data Report	2010
Cultural Landscapes Inventories: Big Meadows, Dickey Ridge, Headquarters, Rapidan Camp, and South River Picnic Grounds	Data Report	2009
Mid-Atlantic Network Data Management Plan	Data Planning	2009
Shenandoah Watershed Study 2007 Report	Data Report	2009

Name	Type	Published
Soils and Foundation Rehabilitation of 16 Historic Overlooks Along Skyline Drive Warren, Page, Rappahannock, Madison, Rockingham, Albemarle, and Augusta Counties, Virginia	Data Report	2009
Vegetation of Shenandoah National Park in Relation to Environmental Gradients, Version 2.0	Data Report	2009
Mid-Atlantic Network Vital Signs Monitoring Plan	Data Planning	2008
Old Rag Parking Lot Shenandoah National Park Environmental Assessment	Planning Document	2008
Potential Development of the Natural Gas Resources in the Marcellus Shale New York, Pennsylvania, West Virginia, and Ohio	Data Report	2008
Climate Summary, Shenandoah National Park	Data Report	2007
Hydrology of Big Meadows, Shenandoah National Park, Virginia: Assessment of a Sensitive Wetland System in the Blue Ridge Mountains	Data Report	2007
Rehabilitation of the Skyline Drive Overlooks Shenandoah National Park Environmental Assessment	Planning Document	2007
What's Up With the Air? Shenandoah National Park	Data Report	2007
Acidic Deposition Impacts on Natural Resources in Shenandoah National Park	Data Report	2006
A Natural Resource Assessment for Shenandoah National Park	Data Report	2006
Cultural Landscapes Inventory Piney River	Data Report	Revised 2006
Effects of stream water chemistry on mercury concentrations in brook trout in Shenandoah National Park	Data Report	2006
The Road Inventory of Shenandoah National Park Volume 1 [first road inventory of park published in 1999]	Data Report	2006
Weather and Climate Inventory National Park Service Mid-Atlantic Network	Data Report	2006

Name	Type	Published
Comprehensive Interpretive Plan 2005 to 2010	Planning Document	2005
Shenandoah Alternative Transportation Planning Study	Planning Document	2005
Evaluation of Several Water Systems in Shenandoah National Park	Data Report	2005
Peregrine Falcon Restoration and Tracking Project Annual Report for 2004	Data Report	2005
Shenandoah National Park Fisheries Monitoring Program Annual Report for 2004	Data Report	2005
Shenandoah National Park Geologic Resource Management Issues Scoping Summary	Data Report	2005
Water Quality Monitoring in the Mid-Atlantic Network of the National Park Service	Data Report	2005
An Archeological Assessment of Browntown Valley and Gimlet Ridge Overlooks, Skyline Drive, Shenandoah National Park	Data Report	2004
Assessment of Late Pleistocene to Recent Climate-Induced Vegetation Changes In and Near Shenandoah National Park (Blue Ridge Province, VA)	Data Report	2004
Biodiversity Associated with Eastern Hemlock Forests: Assessment and Classification of Invertebrate Biodiversity within Shenandoah National Park	Data Report	2004
Collection Management Plan	Planning Document	2004
Shenandoah National Park, Virginia Water Resources Scoping Report	Data Report	2004
A Revised Sampling Design for Vegetation Inventory and Monitoring at Shenandoah National Park	Data Planning	2003
Assessment of Air Quality and Related Values in Shenandoah National Park	Data Report	2003
Geology of the Shenandoah National Park, Virginia [originally published in 1976]	Data Report	Reprinted 2003
Integrated Pest Management Plan For the Buildings and Facilities of ARAMARK Sports and Entertainment Services, Inc.	Planning Document	2003

Name	Type	Published
State of the Parks Shenandoah National Park A Resource Assessment	Data Report	2003
Air Emissions Inventory for Shenandoah National Park	Data Report	2002
Shenandoah National Park Fisheries Monitoring Protocol	Data Planning	2002
Field Report [Alternative Transportation System] Shenandoah National Park	Data Report	2001
Historic Furnishing Report Rapidan Camp: "The Brown House"	Planning Document	2001
Historic Furnishing Report Massanutten Lodge at Skyland	Planning Document	2000
Baseline Water Quality Data Inventory and Analysis Volumes I–V	Data Report	2000
Cultural Landscapes Inventories: Appalachian Trail – North District, Central District, South District, Appalachian Trail Landscape, Lewis Mountain, Pinnacles Picnic Grounds, and Skyland	Data Report	1999
Geology along Shenandoah National Park, Virginia	Data Report	1999
Reconstructing the Past: Describing Vegetation Composition and Change at Camp Hoover, Shenandoah National Park	Data Report	1999
Backcountry and Wilderness Management Plan	Planning Document	1998
Resource Management Plan [first resource management plan published in 1981]	Planning Document	1998
Preliminary Archeological Testing of Proposed Geotechnical Bore Hole Locations at Park Headquarters, Shenandoah National Park, Virginia	Data Report	1997
Progress Towards Formation of a Biosphere Reserve for the Central Appalachian Region: Final Report	Data Report	1997
Strategic Management Plan FY1998	Planning Document	1997
The Southern Appalachian Assessment: Summary Reports Vol. 1–5	Data Report	1996
Flood Profiles and Flood-Boundary Maps for West Swift Run at Swift Run, Virginia Administrative Report	Data Report	1995

Name	Type	Published
Old Growth Report Shenandoah National Park (working document)	Data Report	1995
A Review of Black Bear Research and Monitoring in Shenandoah National Park	Data Report	1994
Natural Heritage Inventory of Mid-Atlantic Region National Parks in Virginia: Shenandoah National Park	Data Report	1993
Long Range Interpretive Plan	Planning Document	1992
Management Suggestions Relative to the Changing Flora of the Meadow at Big Meadows	Planning Document	1992
Bear Management Plan	Planning Document	1990
Miscellaneous Archeological Investigations Shenandoah National Park North, Central, and South Districts	Data Report	1990
Gypsy Moth Integrated Pest Management Plan	Planning Document	1987
Meadow Management Plan	Planning Document	1985
Shenandoah National Park Land Protection Plan	Planning Document	1984
General Management Plan Development Concept Plan	Planning Document	1983
Fire Management Plan	Planning Document	1982
Administrative History Shenandoah National Park 1924–1976	Data Report	1979
The Nature of Shenandoah A Naturalist's Story of a Mountain Park	Data Report	1975
Wilderness Study	Data Report	1971
Geomorphology of the Shenandoah Valley – Virginia and West Virginia and Origin of the Residual Ore Deposits	Data Report	1965
Master Plan for the Preservation of Shenandoah National Park Mission 66 Edition	Planning Document	1962

Northeast Region Foundation Document Recommendation
Shenandoah National Park

April 2015

This Foundation Document has been prepared as a collaborative effort between park and regional staff and is recommended for approval by the Northeast Regional Director.

Jim Northup 4/21/15

RECOMMENDED
Jim Northup, Superintendent, Shenandoah National Park **Date**

4/30/15

APPROVED
for **Michael Caldwell, Regional Director, Northeast Region** **Date**

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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April 2015

Foundation Document • Shenandoah National Park

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