

CHAPTER 3

AFFECTED ENVIRONMENT

CEDAR CREEK AND BELLE GROVE NATIONAL HISTORICAL PARK



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3.0 Affected Environment

3.1 Introduction

3.1.1 Park Setting

Cedar Creek and Belle Grove NHP (NHP) was established by Congress on December 19, 2002 (Public Law 107-373) as the 387th unit in the national park system. The park is located at the northern end of the scenic Shenandoah Valley between the towns of Strasburg and Middletown, Virginia. Portions of the park are within Frederick, Shenandoah, and Warren counties.

Cedar Creek and Belle Grove NHP is managed and operated as a partnership park as outlined in the park's enabling legislation (see Appendix A). The National Park Service (NPS) works with its Key Partners to conserve and interpret the park resources. The NPS helps promote the park and coordinate partner activities. The park's Key Partners include the Cedar Creek Battlefield Foundation, the National Trust for Historic Preservation, Belle Grove, Incorporated, Shenandoah County, and the Shenandoah Valley Battlefields Foundation. Local governments are also partners with the NPS at the park.

The park's legislated boundary encompasses 3,713.28 acres. The NPS and the Key Partners currently own about one-third of the land within the boundary. Presently the NPS owns 68.79 acres, and the Key Partners own 1,307.42 acres in fee and hold conservation easements on an additional 32 acres. About 2,305.07 acres of the park are privately owned.

The park is within the Shenandoah Valley Battlefields National Historic District, established in 1996 to preserve and interpret the Shenandoah Valley's Civil War legacy and historic landscapes. George Washington National Forest and Shenandoah National Park are located just south of the park.

3.1.2 Park Significance

The park's *Foundation for Planning and Management* (NPS 2006a) includes four significance statements that express why the park's resources and values are important enough to warrant national park designation.

*The **Battle of Cedar Creek** was a principal strategic operation that had a decisive influence on the Valley Campaign of 1864 and a direct impact on the course of the Civil War. The Union victory contributed to the re-election of President Abraham Lincoln and nearly eliminated the Confederate military presence in the Shenandoah Valley. The battlefield and strategic landscapes at Cedar Creek retain a high degree of integrity, serve to memorialize the events of the battle, and contribute to greater understanding of the Civil War.*

*Cedar Creek and Belle Grove NHP include well-preserved cultural and natural landscape features from the **early European settlement** of the Shenandoah*

Valley when the region was a frontier, including features associated with transportation, migration, and commerce.

*Cedar Creek and Belle Grove NHP contains historically significant examples of the **antebellum agricultural community** that defined the northern Shenandoah Valley, its ethnic and cultural traditions, merchant milling and market systems, and farm economy that included both slave labor and family farms, as well as examples of the post-Civil War transformation of a changing labor structure. A representative example of the valley's agricultural history and culture is preserved and interpreted at the nationally significant Belle Grove Manor House.*

*The park's **natural and cultural landscapes** are nationally and regionally significant. The panoramic views of the mountains, natural areas, waterways, and pastoral surroundings convey an aesthetic and historic sense of 19th and 20th century life in the Shenandoah Valley, provide visitors with an inspiring setting of great natural beauty, and offer outstanding opportunities for quiet and solitude in an ever expanding suburban area.*

These four statements describe why the park is important within a global, national, regional, and system-wide context and are directly linked to the purpose of the park. These statements, along with the fundamental resources and values described in the *Foundation*, are referenced and expanded upon in this chapter. Fundamental resources and values are elements that define and contribute to the character of the park, and are critical to achieving the park's purpose and maintaining its significance.

3.1.3 Organization of This Chapter

Typically, the "Affected Environment" chapter of an environmental impact statement (EIS) would address only those resources and values that may potentially be affected by actions proposed in the alternatives of the plan. However, since this general management plan (GMP) is the park's first comprehensive planning document produced since the park was established, this chapter was purposely written to be more encompassing of the park's resources and values, even if they will not be directly affected by any of the alternatives. Those resources and values that may potentially be affected by one or more of the plan's alternatives are analyzed in detail in Chapter 4, Environmental Consequences. The rationale for dismissing or retaining impact topics for detailed analysis is included in Chapter 1.

This chapter describes existing conditions based on the best available information on resources and values at the time this GMP was being prepared, and is intended to serve as a baseline of information from which to move forward. The "Cultural Environment" and "Natural Environment" sections provide an overview of the park's cultural and landscape settings, as well as the resource conditions and trends. The "Visitor Use and Experience" section describes the park's visitors and the experiences that they have in the park. The "Socioeconomic Environment" section describes the socioeconomic characteristics of the local area and the region.

3.2 Cultural Environment

As noted earlier, this chapter includes information on all cultural resources and values for the park for the purpose of compiling this information for this first GMP. Cultural resources will be analyzed for potential impacts according to regulations put forth by the Advisory Council for Historic Preservation, 36 CFR 800. The following resources and values may potentially be affected by the GMP alternatives: Archeological Resources, Ethnographic Resources, Historic Structures, Cultural Landscapes, and Museum Collections. The information presented here for these topics serves as the description of the Affected Environment in accordance with the requirements of the National Environmental Policy Act (NEPA). All other topics and information included in this section are presented as background but have been dismissed from further analysis in the EIS.

3.2.1 Historical Designations

Cedar Creek Battlefield and Belle Grove Plantation National Historic Landmark, consisting of some 900 acres, was designated on August 11, 1969. The boundaries of the national historic landmark included the core area of the battlefield where fighting occurred on October 19, 1864.

In 1993 the Civil War Sites Advisory Commission designated Cedar Creek as a Class A battlefield because it had a decisive influence on Sheridan's Shenandoah Valley Campaign (August-December 1864) and a direct impact on the course of the war. Furthermore, the commission classified Cedar Creek as a Preservation I.1 (Class A) battlefield. Such battlefields were defined as those having critical preservation needs requiring nationwide action because they retained good or fair integrity and faced high or moderate threats while less than 20 percent of their core areas were protected.

Cedar Creek and Belle Grove NHP lies within the Shenandoah Valley Battlefields National Historic District, established by Congress in 1996 (Public Law 104-333) to preserve and interpret the Shenandoah Valley's Civil War legacy and historic landscapes—the places, events, and people (soldier and civilian) before, during, and after the war. The national historic district comprises Augusta, Clarke, Frederick, Highland, Page, Rockingham, Shenandoah and Warren counties, and the independent cities of Harrisonburg, Staunton, Winchester, and Waynesboro, as well as ten battlefields (one of which is Cedar Creek) and a number of historically important transportation routes.

Cedar Creek and Belle Grove NHP is listed in the National Register of Historic Places in accordance with 36 CFR 60.1(b) (1) and Director's Order 28: *Cultural Resource Management Guideline*, Chap. 2, Art. B, which state: "Historical parks of the

National Park System are automatically listed in the National Register upon their legal authorization. National Register nomination forms and boundary maps nevertheless must be prepared for them to document and delineate the resources contributing to their significance.”

Although national historic landmark and national register documentation for the park needs to be updated and completed, the park’s enabling legislation states that its significance incorporates existing National Register of Historic Places and National Historic Landmark designations and “the rich story of Shenandoah Valley history from early settlement through the Civil War and beyond and the Battle of Cedar Creek and its significance in the conduct of the war in the Shenandoah Valley.” Figure 3.1 depicts these significant historic resources.


3.2.2 Historical Context

The physical landscape of the park lands has been shaped by natural and cultural forces for millennia. Geological strata, associated soil types, patterns of drainage and hydrography, and topography have combined to sculpt and shape a complex landform of scenic beauty to which American Indians, early settlers, advanced agriculturalists, and military strategists adapted their activities. The quality and productivity of the soils attracted agriculturalists, while water flow determined the placement of water-powered businesses and lumber mills. Farms were located with access to water, pasture, and fields to ensure survival and later profit. Growing prosperity brought architectural visibility with new and sometimes substantial homes being constructed on large agricultural properties or plantations that were situated and oriented to view magnificent mountain scenery and valley vistas. As settlers and entrepreneurs exploited and developed the land and its resources, road systems evolved and populations grew; towns and marketing centers formed at points of maximum local and regional access. As armies moved across the land, they followed the already existing road systems, using them as lines of movement and supply as well as points of military deployment and retreat. Open farmland became camps for small groups and massive armies, fields became battlefields and cemeteries for the dead in battle, and homes became headquarters and hospitals. While open fields facilitated military movement, deeply entrenched streams and creeks became defensive walls that hindered movement and became traps and killing fields.

Despite the threat of increasing encroachment by modern development, the park area is unique in that the historical landscape provides the nation with a vivid and continuous historical record of the region known as the Lower Shenandoah Valley, an area that extends from Winchester on the north to Middletown and Strasburg on the south, with the natural boundaries of the Blue Ridge to the east and the Allegheny Mountains to the west. The land appears much as it did a century ago.

Figure 3.1

Cultural Resources Nominated to or Determined Eligible for the National Register of Historic Places


 Cedar Creek Battlefield and Belle Grove Plantation National Historic Landmark

 Fort Bowman (Harmony Hall)


 Long Meadow Farm (Long Meadow)

 Middletown Historic District

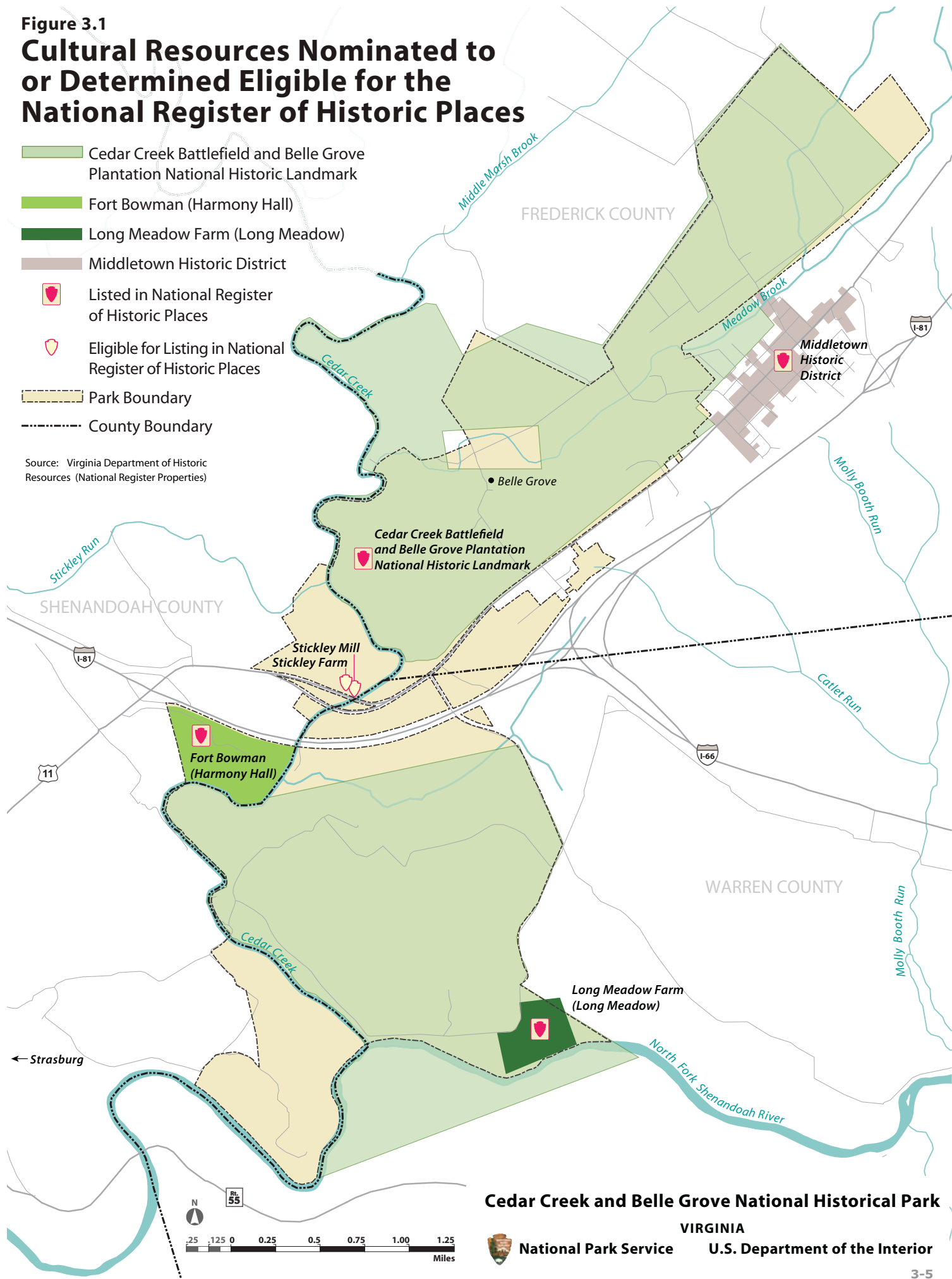
 Listed in National Register of Historic Places

 Eligible for Listing in National Register of Historic Places

 Park Boundary

 County Boundary

Source: Virginia Department of Historic Resources (National Register Properties)



Cedar Creek and Belle Grove National Historical Park

VIRGINIA



National Park Service

U.S. Department of the Interior

Patterns of settlement, historic plantations and homes, pastoral farmsteads, and transportation systems are still largely within their original rural setting. Thus, a visitor can experience a variety of diverse physical and visual landscapes that have historical significance within a relatively small geographic area.

The Lower Shenandoah Valley has a long, rich history. The area is linked by a series of historic roadways and paths, the most famous once known as the “Great Warrior Path,” which extended from New York and Pennsylvania into South Carolina. This trail, the major north-south trending route through the Shenandoah Valley, began to evolve into the “Great Wagon Road” after the 1744 Treaty of Lancaster, between representatives of the Iroquois and the colonies of Pennsylvania, Maryland, and Virginia, increased safety for pioneers moving south out of Pennsylvania. On March 3, 1834, the Valley Turnpike Company was incorporated by the Virginia General Assembly, which authorized construction of a new 68-mile turnpike from Winchester to Harrisonburg funded by public-private investment. The turnpike was surfaced with macadam pavement and eventually merged with a similar road from Harrisonburg to Staunton to form the “Valley Pike.” Eventually spanning a distance of 93 miles, owners of the Valley Pike charged tolls to fund its ongoing maintenance. Later, in 1918, the Valley Pike was incorporated into the first Virginia state highway system and designated as State Route 3. In 1926, the highway was re-designated State Route 11, and three years later it was realigned and widened.

Native peoples of the eastern Woodlands region ranged extensively to the north and south along the Great Warrior Path, and from it could access east-west routes along the upper drainages of the Potomac and Susquehanna rivers. The Monacan occupied the Shenandoah and the upper James and Piedmont regions, but were under constant challenge from large tribes on all sides. To the north the powerful and dominant Susquehanna moved into the Valley at several points to travel south and hunt. To the east the Powhatan Confederacy loosely allied tribes in the upper coast plan. The section of the Great Warrior Path along the Shenandoah River was part of a larger regional network that extended southward from the Kanawha River of West Virginia toward present-day Kingsport, Tennessee. This natural travel route tied native communities to one another and enabled trade access and social interactions through vast portions of eastern North America from the Archaic Period (ca. 9500 to 1000 BC) to and beyond the arrival of European settlers during the 17th century.

During the 17th century, this great path also beckoned European traders, explorers, and adventurers, including John Smith, one of the 144 English colonists who disembarked at Jamestown on May 24, 1607, and became a noted explorer, author, and member of the colony’s governing council. Smith met native people from the Shenandoah region traveling eastward along the Potomac, and heard of many others who made their home in what is now called the Shenandoah Valley. Thus, when the first white homesteaders moved into the park area during the 1720s in what would become Frederick County, they encountered a tempered landscape

already shaped by centuries of human use and occupation. At the time of European contact, American Indian groups—including Piedmont Siouans, Catawbans, Shawnee, Delaware, Northern Iroquois (Mohawks, Oneidas, Onondagas, Cayugas, Senecas, and later Tuscarora), Cherokee, and Susquehannocks—are thought to have been active in the park area. Some of these groups had developed permanent and semi-sedentary villages along the broad flood plain levees where the best, most workable soils were to be found in the region. The native peoples routinely cultivated maize, beans, and squash, and also utilized the abundant natural resources of the area to sustain their communities.

After 1690, Virginia colonial government encouraged European settlement beyond the Atlantic seaboard and tidal rivers, in part to secure land against French encroachments and American Indian incursions. Shenandoah Valley settlement would become strategically important in the global imperial struggle during the first two-thirds of the 18th century and the subsequent rise of commercial grain agriculture as a function of an Atlantic-wide increase in flour prices. The first settlements near the park area were located near Opequon Creek. Using the sites and travel corridors previously used by American Indians, settlers representing a diverse mix of ethnic origins peopled the valley; the most prominent of these people were the German and Scots-Irish from Pennsylvania. Noticeably different from the plantation culture found east of the Blue Ridge Mountains, the German and Scots-Irish immigrants established communities of yeoman freeholders who took up and developed medium-sized tracts of land. They created socially and economically integrated settlements characterized by networks of kinship, trade, and religious affiliation. Thus, the open-country area of the Lower Shenandoah became a settled landscape consisting primarily of small towns and dispersed and enclosed farms. By the mid-1750s, three counties—Hampshire, Frederick, and Augusta—were formed west of the Blue Ridge Mountains. As the region's population increased, Shenandoah and Warren counties were established in 1772 and 1836, respectively.

When the first European settlers arrived in the Lower Shenandoah, large tracts of land bordering the Great Warrior Path were the property of Lord Fairfax, who had proprietorship of 5,282,000 acres in what is now Northumberland, Lancaster, Westmoreland, Richmond, Stafford, Rappahannock, Culpeper, Madison, Clarke, Warren, Page, Shenandoah, and Frederick counties. The celebrated first European settler of the region was Jost Hite, who was among the earliest of many German immigrants to emigrate from the Rhineland-Palatinate in 1709. After settling in the Germantown area of Philadelphia, Hite received a land grant from Virginia Governor Sir William Gooch in 1731 and led a group of 16 families to the Lower Shenandoah. Hite built a cabin and fort at Opequon Creek, near present-day Springdale along State Route 11. While Hite would remain at Springdale for the remainder of his life, his son would eventually settle at Long Meadow, a 900-acre tract near the North Fork of the Shenandoah River and one mile downstream from the mouth of Cedar

Creek on what contemporary records suggest was an American Indian campsite and burial ground.

In 1732 German pioneers George and Mary Hite Bowman settled on land bounded by present-day I-81 and Cedar Creek about 0.8 miles southeast of State Route 11 when Mary's father, Jost Hite, began the aforementioned colonizing venture in the Lower Shenandoah. About 1755 the Bowmans constructed a home on the property, originally known as Fort Bowman but later taking the name Harmony Hall. Hite and his son-in-law George Bowman had large families, the members of which acquired extensive landholdings in the area and became important in the social and political life of the region.

Following the War for American Independence, the Lower Shenandoah experienced significant economic, political, and social change. The rise in grain and flour prices throughout the Atlantic and Mediterranean economies during the last third of the 18th century and improvements to the Virginia's transportation network resulted in the region's growing prosperity beginning in the late 18th century and continuing into the 19th century. As a result of the improved road system, the subsistence farms of the Lower Shenandoah were connected with wider regional, national, and international markets, thus enabling them to transport cash crops to outside markets. These developments had a profound impact on life in the valley as the agriculturalists responded to the market demands of the wider world by transitioning from an exchange economy to commercial wheat and livestock production. As part of this socioeconomic transformation, the number of gristmills increased, and towns became centers for trade and commerce.

In 1783, Hite's grandson, Isaac, Jr., married Nelly Conway Madison, sister of James Madison and daughter of a wealthy tobacco planter and member of the Tidewater elite. Through the Madison family, Isaac, Jr., and Nelly were linked to the foremost political leaders of their day, including Thomas Jefferson. Upon his marriage, Isaac, Jr., received a 483-acre tract along the Great Wagon Road near Middletown from his father. As the late 18th and early 19th century agricultural economy of the Lower Shenandoah prospered, Hite's holdings grew to more than 7,500 acres on which he developed Belle Grove, one of the largest plantations in the Lower Shenandoah.

Belle Grove was a product of the sweeping economic and social changes in America that turned the isolated backcountry region of the Lower Shenandoah into a unique slave society enmeshed in the national and global market economy. What emerged in the region was a diversified economy in which the majority of the Valley's inhabitants were German-American and Scots-Irish yeoman farmers, entrepreneurs, small businessmen, and merchants rather than slaves and slave owners. Thus, the Lower Shenandoah economy veered away from the tobacco-driven plantation slave society that prevailed in the Tidewater regions of Virginia. The transition from an 18th century backcountry settlement to an established "New Virginia" community in

the Shenandoah Valley resulted in the creation of a unique slave society that had implications for the area's physical and cultural landscape as well as its relationship between town and countryside and racial and class relations.

Wheat production created economic opportunities for whites of all classes and allowed for broad participation in the consumer revolution that began in the late 18th century. However, the 19th century witnessed a hardening of class and racial lines in the Shenandoah Valley as the region became a mature slave society in which social and economic exchanges forged an increasingly hierarchical community composed of upper-class white slaveholders, lower-class yeoman farmers and freeholders, entrepreneurs and small businessmen, and slaves. Pre-Civil War free African American communities in the area also made important contributions to the region's economy.

With the outbreak of the Civil War in 1861 residents of the Shenandoah Valley remained largely aloof to the causes of the conflict. Although Confederate allegiance might have been strongest among the minority of slave owners, large numbers of valley residents asserted loyalty to the Union. Hence David Hunter Strother, an astute observer of Shenandoah Valley society at the time, described the valley as "a debateable ground" in 1862. Nevertheless wartime demands and wartime weariness increasingly alienated some elements in valley society. Among the dissident elements were those of German ethnicity, many of whom were members of the region's historic peace churches who conscientiously objected to participation in war.

By 1864 the civilian and military participants in the Lower Shenandoah had assumed a "hardened" view of war, exhibiting a grim resoluteness that enabled both sides to commit heinous acts toward each other while destroying the physical resources of the valley. During the early years of the war, the productive granary in the Shenandoah Valley had served as the "Breadbasket of the Confederacy," but regular conscriptions of food and livestock had slowly impoverished local landowners. Within the park area displays of Confederate support included soldier recruitment, intelligence gathering, provisioning of Southern units, and guerrilla activity against Union forces. The strategic as well as the agricultural importance of the Lower Shenandoah meant that it became the locale of many skirmishes and battles, thus devastating the landscape and leaving the area a wasteland in the war's aftermath. Additionally, the Union army's destructive ways, such as the methodical burning of barns, mills, crops, and livestock by order of Maj. Gen. Phillip H. Sheridan in October 1864, turned many ambivalent Southerners into ardent Confederates.

On October 19, 1864 the Confederates, under Lt. Gen. Jubal A. Early, surprised the federal army at Cedar Creek and routed the VIII and XIX Corps, implementing a masterfully conceived and brilliantly executed tactical plan. Sheridan arrived from Winchester to rally his troops, and in the afternoon, launched a crushing counterattack that succeeded in recovering the battlefield and control of the

Shenandoah Valley to Union forces. The Battle of Cedar Creek was a crucial Union victory that nearly annihilated Early's Confederate army while helping Abraham Lincoln secure his reelection at a time when the northern populace was divided over the war.

As a result of the large-scale destruction of farms and mills during the Civil War, grain and livestock production declined drastically in the Lower Shenandoah. Agricultural production slowly recovered during the postwar years, and during the late 19th and early 20th centuries, forested lands along the uplands, east of the Valley Pike, became increasingly fragmented as a result of extensive clearing for agricultural and pasture use. By the early 20th century, the Lower Shenandoah experienced a phenomenal rise in apple production as apples replaced wheat as the primary cash crop. Numerous facilities were developed to support apple production and processing.

The Lower Shenandoah underwent a revolution in land and labor because of the Civil War. The destruction of slavery forced whites and blacks to reconstruct social, political, and economic relations in a world of "free labor" as former slaveholders reconstituted themselves as a new ruling class in a new world in which freed people were allowed to buy and sell their labor and exercise their political rights as full citizens. During Reconstruction, African Americans made considerable social and economic progress, articulating a version of freedom that clashed with the interests of most whites who desired to create new forms of labor and social suppression. After the war, many emancipated slaves moved north and west, creating a labor shortage in the Lower Shenandoah, and bankrupting many whose fortunes had been tied to the prewar slave-based economy. A Freedmen's Bureau facility was established in Winchester, however, and some blacks remained in the region; they joined prewar free African American communities that survived the conflict and they thrived during Reconstruction, working small farms on a sharecropping or tenant basis, or employing their skills locally. However, African American equality was challenged during the late 19th century with the codification of Jim Crow legislation and enactment of the "separate but equal" doctrine into law, thus creating a sanctioned lower class and rigid racial segregation.

The historical landscape of Cedar Creek and Belle Grove NHP testifies to the South's reincorporation into the United States during the post-Civil War era in two important ways. First, the "New South" movement of the late 19th century was an attempt by Southern leaders to rebuild the former Confederacy with the cooperation and capital of Northern businessmen. In accepting Northern investment Southern leaders recognized the supremacy of federal authority, and they were allowed to do so without having to eradicate the memory of the failed Confederate experiment or give up home rule over African Americans and poor whites.

The development of Meadow Mills to the west of Belle Grove is a New South creation because it represents an example of the South's attempt to rebuild after the Civil War. During Reconstruction, northern companies successfully obtained charters and ultimately built a railroad line through the entire length of the Shenandoah Valley. In 1867, the Winchester and Strasburg Railroad connected Harpers Ferry to the rail line stretching south to Harrisonburg. The rail line, which was constructed west of the Valley Turnpike in the park area, eventually became part of the Baltimore and Ohio Railroad network, and its location contributed to establishment of the Meadow Mills community and its nearby limestone quarries. Small-scale limestone quarries, including the Conner Lime Kiln, were developed near Meadow Mills during the early 20th century, but large scale quarry production and other mining operations for limestone, shale, sand, and crushed stone, would not begin until after the 1930s.

The New South campaign also complemented a national reconciliation movement that sacrificed the rights of African Americans in exchange for sectional reunion and white Southern home rule. Crucial to this process was the commemoration of Civil War battlefields as places where American brothers showed their manly spirit and bravery on behalf of ideals for which they fought rather than as killing fields where the nation engaged in massive bloodletting over slavery. At Cedar Creek, three monuments were erected as event organizers invented a new past lacking the bitterness and controversy that animated the actions of Union and Confederate soldiers in the fall of 1864. For example, former Union Col. Henry A. DuPont, then serving as a U.S. Senator from Delaware, gave a sensitive and moving rendition of Maj. Gen. Stephen D. Ramseur's death at Belle Grove during the dedication of the Ramseur Monument in 1912. In death, Ramseur was portrayed as a valiant soldier doing his duty while engaged in an apolitical cause, its goal of disunion and slavery ignored. Thus, DuPont's dedication speech reflects how the Cedar Creek battlefield was transformed into a memorial landscape where Northerners and Southerners came to commemorate their wartime actions and spread the message of sectional healing and reunification as the people in the Lower Shenandoah adjusted to the powerful racial and class changes of the post-Civil War years.

During the early 20th century, mining for limestone, shale, sand, and crushed stone became important industries in the Lower Shenandoah, resulting in development of numerous quarries. Forested lands along the uplands, south of the Valley Pike, became fragmented from extensive clearing for agricultural and pasture use. In 1918 the Valley Pike was incorporated into the first state highway system. Designated initially as State Route 3, and later changed to State Route 11 in 1926, the road, which was realigned and widened in 1929, remained the regional north-south thoroughfare throughout the mid-20th century. As a result of the expanding population of Middletown during the 1910s-1930s, increasing development occurred along State Route 11 and secondary routes that terminated at Middletown.

During the latter decades of the 20th century, agricultural production in the Lower Shenandoah continued to decline, resulting in reforestation of many areas. The growth of Middletown and Strasburg, along with highway development and limestone mining expansion, during recent decades has resulted in the loss of open space and elements of the park area's rural character. These developments in turn have provided the backdrop for efforts to preserve the area's significant cultural landscape resources and historical legacy culminating in establishment of Cedar Creek and Belle Grove NHP.

3.2.3 Archeological Resources

A three-volume archeological overview and assessment of Cedar Creek and Belle Grove NHP prepared in 2006 includes information on 105 archeological sites and site complexes within the legislated boundaries of the park based on a review of previous research and selected field visits. Although comprehensive archeological research has not been conducted on park lands, various organizations, including the National Trust for Historic Preservation, Cedar Creek Battlefield Foundation, Shenandoah Valley Battlefields Foundation, Wayside Museum of American History and Arts, Chemstone, Inc., and the Shenandoah County Department of Parks and Recreation, have conducted significant cultural resource investigations on the properties they own; it is these investigations that serve as the basis for the aforementioned archeological overview and assessment.

With the exception of certain cultural features on the grounds of Belle Grove and the Solomon Heater Farm, only two of the sites within the legislated park boundaries have been archeologically tested or assessed. Both of these sites—Panther Cave and Bowman Site—have prehistoric associations and were found to have ceramic fragments in their assemblages. Panther Cave, which has been designated as a "Significant Cave" by the Virginia Cave Board because of its archeological significance, has yielded a rich assemblage of artifacts that suggest the site was used as a temporary encampment during hunting expeditions from the Middle Archaic through the Late Woodland periods. Only one military site—an 1862 Union Sibley tent encampment on the grounds of the Heater Farm—has been archeologically tested, and the line of earthwork defenses west of the XIX Corps encampment has been well documented and interpreted.

Twenty-two of the identified archeological sites in the park exhibit evidence of American Indian occupation. This number is not believed to be a true reflection of the extent of American Indian settlement, although the types of sites may be an accurate indication of the nature of occupation. Significant and broad terrace lands along the North Fork of the Shenandoah River and along Cedar Creek below Bowman's Mill remain to be investigated. These lands are particularly important because they possess a high probability for potentially significant American Indian agricultural settlements.

The sites that have been located suggest a fairly marginal level of American Indian occupation, with only one site (Bowman Site) possessing artifacts of a type or quantity indicative of a possible sedentary community. The remaining sites are identified as sparse and widespread lithic (stone tool) scatters suggesting fairly brief episodes of encampment, although some of the sites may have been visited more than once. Most, but not all, of the sites, including the Bowman Site, have been impacted by modern agricultural activity. Site placement throughout the park appears to clearly favor lands near water, and no data show evidence of significant American Indian occupation of the upland areas away from stream flows. Only three of the 22 recorded sites have possible temporal assignments which range from the Middle Archaic (6500-2500 BC) through the Late Woodland (900-1700 AD) eras.

Seventy-one recorded archeological sites in the park are deemed to have military significance. Of these, three relate to 1862 military activities, 57 relate to the Battle of Cedar Creek in 1864, and 11 are of uncertain affiliation. Approximately 18 of the sites are associated with what are thought to have been encampments, while several may be associated with hospitals and artillery and battery emplacements. Thirty-two archeological sites consist of landscape features. While the landscape-associated sites do not necessarily contain manmade military features, they contributed to the cultural landscape within which the Battle of Cedar Creek was fought.

Twenty-six recorded archeological sites in the park are associated with residential and agricultural development beginning in the late 18th century. The cultural geography of the park lands and contiguous areas was shaped by the emergence of highly profitable plantations and family farms, enhanced in the 20th century by the development of industrial quarrying. With the exception of the rise of the late 19th-early 20th century community of Meadow Mills, which also had ties to agriculture, non-agricultural related residential patterns did not emerge in the area of the park until later in the 20th century. Sites associated with residential and agricultural development in the park that have archeological components include plantations, such as Long Meadow, Harmony Hall, and Belle Grove, and smaller family farms and farmsteads, such as those associated with Solomon Heater; Daniel Stickley; C.I Hite (Whitham); and the McInturf, Davison/Wilson, and Keister families.

Several archeological sites in the park are related to water-powered milling. These include the Bowman Mill, constructed ca.1810-20 and utilized into the 20th century; George Bowman Mill, constructed ca. 1753 (including a saw mill); Daniel Stickley Mill, constructed during the early 19th century; Hite/Hottle Mill, a complex that included merchant and saw mills and a distillery constructed by the Hite family before the American War for Independence and which remained in use into the early 20th century; and Miller's Mill, constructed during the mid-19th century and utilized into the early 20th century.

Four archeological sites in the park are related to quarrying activities. These include quarry pits east of Cedar Creek of uncertain age; an isolated quarry pit east of Cedar Creek of uncertain age; a line of quarry pits that extend the length of the Hite-Hottle Mill complex north of Meadow Brook; and the Connor Lime Kiln, an early 20th-century quarry site that includes pits that are believed to date to the late 18th century.

Additionally, transportation-related archeological sites in the park include fords, bridges, roads, such as the Valley Pike, and rail lines.

3.2.4 Ethnographic Resources

A draft *Ethnographic Overview and Assessment*, prepared for the NPS in 2006, concluded that there are places within the park boundaries that have important significance for local landowners (mainly descendants of German and Scots-Irish settlers), certain non-conformist religious practitioners such as members of the Church of the Brethren, and commemorators of the Civil War. Other groups investigated during the research, including American Indians and African-Americans, have important historical connections to the park but maintain few, if any, recent or contemporary associations with park resources. The stories that emerge from the ethnohistorical research bring this long and complex history to life and demonstrate that the region in which the park is located constitutes the focus of diverse histories and multi-faceted cultural experiences.

American Indians had a presence in the area from the first human occupation of the Lower Shenandoah during the Paleo-Indian period (ca. 9500-10,000 BC) until the end of the 18th century. The valley served as a locale for settlement and resource harvest by American Indian communities as well as a major travel corridor along which tribal groups from more distant locations moved up and down the valley and migrated through the area for purposes of trade and raiding. Numerous American Indian tribal groups inhabited or passed through this portion of the Shenandoah Valley (along the "Great Warrior Path" that is now Route 11) during the 17th and 18th centuries, and their associations constitute an important component to the history and ethnographic landscape of the park.

Europeans began moving into the area and encroaching on Indian lands in the 1720s, and colonial and imperial officials began promoting non-Native settlement in the region during the 1740s. The arrival of European settlers resulted in profound changes for Native cultures in the Lower Shenandoah. Indians were taken from a largely self-sufficient, bartering economy characterized by low level chiefdoms to a quasi-market situation, marked by increasing dependency on an alien society that did not have a place for the original inhabitants. In addition, significant population losses from the introduction of new diseases radically altered the nature and structure of the indigenous population. Together these trends resulted in the dispersal of the Native inhabitants of the Lower Shenandoah Valley by the end of

the War for American Independence. Although there is little historical evidence of Native American presence in the park area during the 19th and 20th centuries, the region continues to have significance for Indian people. The very visible Massanutten Mountain, for example, continues to be a central feature of the Native American historical landscape, and the Monacan Indian Nation has many recollections about the mountain and about the valley and its inhabitants that contribute to its sense of cultural identity today.

One of the most significant characteristics of the park area is its long and continuing association with members of a variety of Protestant and Reformed denominations, including Methodists, Lutherans, Presbyterians, and the Church of the Brethren. German and Scots-Irish settlers, the predominant ethnic groups in the area, brought their Reformed religious practices with them. Among the first important Protestant denominations to reach the Lower Shenandoah were the Quakers who arrived by the mid-18th century. In 1844, Strasburg's oldest congregation built St. Paul's Lutheran Church. Today, the Quakers, Brethren, and Mennonites comprise three significant historic "peace" denominations for whom the Lower Shenandoah remains a stronghold. Scots-Irish settlers constituted another important immigrant group that arrived in the Lower Shenandoah shortly before the American War for Independence. Many arrived in the area through the influence of Methodist Reverend Robert Strawbridge and his followers whose ministry, characterized by circuit-riding preaching, drew a large following. Although the early Methodists often cooperated with the United Brethren, they participated actively in the various military conflicts that wracked the region, especially during the Civil War.

The Shenandoah Valley continues to be one of the principal centers of the Church of the Brethren in the United States. This area and Lancaster County, Pennsylvania, have the denomination's highest concentration of churches compared to other regions in the country. Brethren probably entered the valley during the mid-18th century. During the Civil War this denomination, a historic "peace church" that rejects participation in warfare, did not support either side although it was opposed to slavery. Brethren churches were often called "meeting houses" by their memberships. The park is situated within the Church of the Brethren Shenandoah District, a multi-county organization of the denomination's churches in the Shenandoah Valley and part of West Virginia which in 2005 numbered more than 14,000 members.

The Brethren church in closest proximity to park lands, located outside the boundary adjacent to the Belle Grove property, is Meadow Mills Church of the Brethren, a congregation that dates from the late 19th or early 20th century when that village was a prosperous crossroads community. This church practiced (and possibly still does) the denomination's distinctive dunking style of baptism in Cedar Creek and the Shenandoah River. It was the distinctive type of baptism practiced by the Church of the Brethren that led non-members to derisively call German

Baptist Brethren and their offshoots “Dunkers.” The Meadow Mills church membership has fluctuated between 100 and 140 people since 1950, and it serves about 100 members today. This church continues to have important associations with the park and its environs.

In contrast to the tidewater region of Virginia, where the commonwealth’s largest plantations and slave populations were concentrated, the Lower Shenandoah was home primarily to “middling” farmers who owned comparatively smaller numbers of slaves. By 1860, the vast majority of slaveholding families in the Frederick-Shenandoah-Warren County area owned 14 or fewer slaves. In contrast, the Hite family’s Belle Grove Plantation, which by 1820 had 103 slaves – the most in the three county area – represented the southernmost extension of the Tidewater complex. In this borderland region of the upper south, the African American experience, both in slavery and in freedom, was fundamentally influenced by the Lower Shenandoah’s commercial grain economy.

The region had a small but important community of free blacks, some of whom may have arrived prior to establishment of the first permanent German and Scots-Irish settlers. By the early 19th century, many free blacks were living in the Lower Shenandoah, often employed as day laborers, while others worked as skilled artisans. Once emancipated, freed African American men and women seized the initiative in organizing their own communities just as freed blacks had done during the antebellum period. During the mid-to-late 19th century, their corporate establishment of small freeholder communities in Frederick, Warren, and Shenandoah counties afforded a testament to African American family and community cohesion. Nevertheless, as a result of increasing discrimination and Jim Crow legislation during the late 19th and early 20th centuries, African Americans in the Lower Shenandoah would participate only marginally as landowners in the region’s agrarian freeholder society. Today, the observable absence of black people in and around the park is explained by historic patterns of out-migration, continued segregation of schools and churches up to the 1970s, the tendency of modern African Americans to work in urban localities outside the valley, and the continued lack of local employment opportunities for blacks.

Belle Grove, Inc., a foundation established in 1974, funds and operates the Belle Grove plantation property, which is owned by the National Trust for Historic Preservation. The foundation and the National Trust have entered into a partnership to operate the plantation, provide a range of interpretive programs open to the public, and host Hite family reunions. Belle Grove Plantation has identified the names (and, in some cases, the origins) of the Hite family slaves and has developed genealogies of the slaves that were in residence during the plantation’s early years, but information is lacking about existing relationships, if any, between these persons and the area’s contemporary residents and groups. It is presumed that such contemporary persons, if located, may preserve important

knowledge of and associations with the Belle Grove Plantation that have been passed down in family histories or oral traditions. A slave cemetery is located on the plantation, but whether this site has ongoing cultural or religious significance to families and groups who may remember or visit the site requires further investigation.

Cedar Creek and Belle Grove is today the site of large-scale re-enactments of the Battle of Cedar Creek. Civil War re-enactors, the largest group which currently makes use of park lands, reflect a deep commitment to historical accuracy combined with a widespread interest in “immersion” history. Commemorative activities at Cedar Creek and Belle Grove go back to the 1870s and 1880s when people began to visit the plantation to commemorate the battle. The first of these groups were members (or descendants) of union forces who had participated in the decisive battle, and who were responsible for erecting monuments presently located near the entrance to the plantation. In Virginia, such commemoration soon became the province of ladies memorial associations which espoused the values and beliefs of the “Lost Cause” tradition that portrayed the south as a victim of northern aggression. As early as the 1880s Frederick Douglass warned against the growing tendency to interpret the Civil War in terms of romanticized notions of the Old South. This controversial viewpoint continues to be a dominant perspective among contemporary Civil War re-enactors.

The Cedar Creek Battlefield Foundation was established to protect and preserve the battlefield, restore the historic Solomon Heater House, and serve “as a forum for history buffs, re-enactors, and descendants of participants in the engagement.” Each fall for more than a decade, thousands of men, women, and children have camped and engaged in battlefield tactics on the Cedar Creek Battlefield in commemoration of the lives and activities of those who fought in the Civil War. The foundation continues to host major battle re-enactments each year that interpret the battle and Civil War era life. These events have become an important element of local cultural life, and many historical organizations, preservation groups, and civic sponsors have become involved in ongoing evolution of the site’s meaning. They have also brought Cedar Creek Battlefield national attention, as visitors from around the nation and the world travel to see the re-enactments and learn about the Civil War. Fees paid by re-enactors to participate in the events support the foundation and have been a major funding source for acquisition and preservation of lands owned by the organization.

Park landowners, current and former residents within the park boundaries, and park neighbors with long standing ties to the park area have strong persistent cultural associations with lands in Cedar Creek and Belle Grove NHP. Those who continue farming and livestock management practices that have their roots in the 19th century also have substantial knowledge about the park area and its resources. These landowners and long-time park neighbors, most of whom are descendants of

families whose ancestors settled the area prior to establishment of the park, have specialized knowledge about the land, farming techniques, and the area's social and cultural history, and retain knowledge of hunting, fishing and collecting wild foods.

3.2.5 Sacred Sites

The historical and ethnographic research conducted for the draft *Ethnographic Overview and Assessment*, prepared for the park area in 2006, indicates that American Indian sacred sites are not likely to be present within the park (Bragdon 2006). This research specifically asked members of the Monacan Indian Nation about the existence of sites with potential cultural and religious significance in or near the park. Studies of places of potential sacred significance to Indian tribes including state-recognized tribes will be conducted in collaboration with the appropriate tribes and groups if information about them becomes available through consultations or further research.

3.2.6 Historic Structures

Structures found in the park are a reflection of the community's cultural and building arts heritage, as well as the individual needs and inherent qualities and specific resources of the landscape. Historic buildings in the park represent all of the important historical eras relating to the area's development and reflect a variety of architectural styles. Some are significant as examples of certain types of architecture or construction technology; others are significant because they contribute to an understanding of park history.

Notable historic buildings within the park include residences, outbuildings, and industrial structures that have been listed in the National Register of Historic Places as well as the Virginia Landmarks Register. Belle Grove, a designated National Historic Landmark as well as a Virginia Historic Landmark, includes a variety of historic resources. The most significant of these are a manor house, overseer's house, dependency, slave quarters, springhead, stable and barn complexes, and Hite-Hottle Mill complex. The exterior of the manor house, one of the outstanding mansions in the Lower Shenandoah, shows Thomas Jefferson's influence from the Tidewater and Piedmont areas as well as Classical Revival elements, while the interior is distinguished by fine woodwork in a transitional style spanning the Georgian and Federal periods.

Other national register-listed properties in the park include Harmony Hall (Fort Bowman), Long Meadow, and portions of the Middletown Historic District, although the majority of the historic district is outside park boundaries. Harmony Hall, a two-story limestone structure, was built by George Bowman (ca.1753) and is an important example of the Pennsylvania German architectural influence in the Lower Shenandoah. Long Meadow is a noteworthy and well-preserved example of a transitional Federal-style to Greek Revival-style two-story brick plantation house.

The current dwelling, constructed by George W. Bowman in 1848, is the second structure to be built on the site. The original dwelling was built during the mid-18th century by Isaac Hite. The original dwelling no longer exists above ground, but it may continue to exist as below-ground archeological evidence. The Harmony Hall plantation features a tenant house as well as several other early structures. Long Meadow is significant as an example of a prosperous working plantation, with a fairly extensive collection of outbuildings that date from both the period of the original house and the period of the current one. It is also significant as one of the initial settlement sites in the Lower Shenandoah.

The Daniel Stickley Farm, consisting of a ca. late 1840s- to early 1850s-era brick, two-story, Federal-style dwelling and six outbuildings, and the Stickley Mill, which includes two stone ruins of a mill that was burned by federal troops during the Civil War, have been determined eligible for listing in the National Register of Historic Structures and potentially eligible for listing in the Virginia Landmarks Register. Although other historic properties in the park have not been formally evaluated for listing in the national register or Virginia Landmarks Register, smaller family farms or farmsteads in the park with 19th and 20th century structural components, such as houses, barns, outbuildings, and other agricultural features, include those associated with Solomon Heater; C.I. Hite (Whitham); and the McInturf, Davison/ Wilson, and Keister families.

One of the properties owned by the U.S. Government is the 8.0-acre Hite-Whitham tract, which was part of the 1,000-acre George Bowman patent of 1732. Located at the south end of the core battlefield, the Hite-Whitham property witnessed significant events associated with the Battle of Cedar Creek, including the strategic movement of Confederate Maj. Gen. Joseph B. Kershaw's left flank and the possible treatment and care of wounded troops. A preliminary assessment of the structures on the property was conducted in June 2006 for the park's List of Classified Structures Database and a draft cultural landscape inventory (DCLI) was completed in November 2007. The conclusions of these assessments related to historic structures are the following:

- Structures considered eligible for the National Register and contributing to the significance of the national historical park
 - Road Trace (date unknown – probably early 19th century – 1937)
 - Bank Barn (date unknown – probably late 19th century – 1937) – Building warrants a structural evaluation
 - Stone-Lined Well (date unknown – probably late 19th century – 1937)
 - Meat Shed (date unknown)
 - Farm House (date unknown – probably early-mid 19th century with later additions) The interior and exterior of the core brick structure

are substantially intact and later additions which obscure its visual integrity are external to it and reversible. In the future, these additions could be removed to reveal a resource with significance related to the Battle of Cedar Creek and the antebellum agricultural community in the northern Shenandoah Valley.

- Structures considered ineligible for the National Register because they either do not retain integrity or do not relate to the period of significance
 - Drilled Well (ca.1970)
 - Collapsed Outbuilding (date unknown)
 - Chicken House (ca. post-1937)
 - Driveway (date unknown) and Brick Gate Piers (ca. post-1969)
 - Manmade Pond (ca. post-1969)
 - Metal Storage Building (modern)
 - Additional Recently-Constructed Outbuildings – Chicken House, Loafing Sheds and Livestock Pen, and Wood Frame Shed
- Significance and National Register eligibility could not be evaluated due to insufficient information
 - Multiple Fence Remnants (dates unknown)

Whether vernacular or high style, these homes and structures are tangible reminders of the park community's past and the cultural heritage of their builders and users. Roads, too, are structures, and many of the primary and secondary roads in the park are historic. Other structures in the park include smaller-scale features such as historical monuments and cemeteries.

3.2.7 Cultural Landscapes

Historical settlement and development patterns and natural and cultural characteristics are important elements of the cultural landscape of the park. Landscape characteristics are the tangible evidence of the activities and habits of the people who occupied, developed, used, and shaped the landscape to serve human needs, and these characteristics may reflect the beliefs, attitudes, traditions, and values of the people. Collectively, landscape features and patterns, and their relationship over time, imprint and reflect human history and give it its character. Three land use history maps of the park area for 1864, 1937, and 2006, prepared as part of the *Land Use History for Cedar Creek and Belle Grove NHP*, provide useful data pertaining to cultural landscape resources—these maps are included as Figures 2, 3, and 4, respectively.

A draft cultural landscape inventory (DCLI) of the Hite-Whitham Farm was completed in November 2007. The DCLI identifies the following landscape

characteristics for the Hite-Whitham farmstead: natural systems, topography, spatial organization, land use, circulation, vegetation, buildings and structures, views and vistas, small-scale features, and archeological sites. The Hite-Whitham farmstead parcel is considered significant for National Register listing for its association with the Civil War. As noted above, the farmhouse has been extensively modified, but remains in the same location. The rural character of the farmstead remains preserved and the gently sloping land, road trace, farmhouse (excluding subsequent additions), and strategic views evoke the Civil War and are present to assist in understanding the strategic role of the landscape in the historic battle.

The following sections summarize the principal landscape characteristics that contribute to the character of the park.

■ **Overall Spatial Organization/Response to the Natural Environment**

By 1864 the southern portion of the present-day park area remained heavily forested, while the majority of the landscape was agricultural. A network of roads connected residential, industrial, and agricultural land uses. The Valley Pike physically divided the landscape into two halves. The road served as the major north-south transportation corridor through the Lower Shenandoah for early settlers, as well as soldiers during the Civil War (in the area of the present-day park, the Valley Pike generally traversed in a southwesterly to northeasterly direction between Strasburg and Middletown). Dispersed along the turnpike were properties, including the Belle Grove Plantation, Solomon Heater Farm, and the Daniel Stickley Mill complex.

East of the Valley Pike, roads physically connecting settlements and mills included Long Meadow Lane, Bowman Road, and Hite Road. Settlements in the area included the J.A. Baldwin, McInturf, and C.I. Hite (Whitham) farms; the Long Meadow and Harmony Hall plantations; and Bowman's Mill. Adjoining these settlement clusters were open areas that were used for grain and livestock production. To the west of the Valley Pike, Belle Grove Lane, Hite Road, and two unnamed farm roads connected the Miller and Ridenour farms and Hottle Mill with the surrounding settlements and farmsteads.

The locations for plantations, farmsteads, and settlements within the present-day park boundaries were directly related to their proximity to the Shenandoah River and its principal tributaries, Cedar Creek and Meadow Brook. Many of the larger dwellings were constructed of limestone, thus implying the existence of quarries or natural outcroppings.

Located east of State Route 11, I-81 has become the major transportation corridor and underlying agent of suburbanization in the park area since 1971. Currently, increasing population growth from the expansion of the Washington, D.C.,

metropolitan area has encroached on lands within the park area, adversely affecting the historic character of the landscape.

■ Vegetation

Early accounts of the Lower Shenandoah Valley during the 18th century indicate that the majority of the valley was forested and dominated by deciduous trees interspersed with a variety of flowering shrubs. Oaks and hickories comprised the majority of the forest in more fertile soils, while pines and conifers were found scattered throughout more sandy and stony soils. Besides areas in which hardwoods thrived, the Lower Shenandoah landscape included areas of poor land, known as barrens, where nothing but pine trees would grow.

Open meadows were also found in the valley. Although the origin of these open areas requires further research, they may have been the result of American Indians clearing the land, periodic flooding, accidental fire, or severe storms. These openings in the forests were of great value to both American Indians and European settlers who used them to locate dwellings, plant and cultivate crops, and raise livestock. Both native and non-native vegetation are present in the park and equally contribute to the character of the cultural landscape.

As a result of the large-scale destruction of farms and mills during the Civil War, grain and livestock production declined drastically in the Lower Shenandoah. However, agricultural and manufacturing production recovered rather quickly after the Civil War, and by 1870 production in most commodities in the agricultural and manufacturing sectors had exceeded their 1860 levels during the postwar years; during the late 19th and early 20th centuries, forested lands along the uplands, east of the Valley Pike, were fragmented as a result of extensive clearing for agricultural and pasture use. Figure 3.2 depicts the vegetation and land use character of the park for the year 1864, and Figure 3.3 depicts the vegetation and land use character of the park for the year 1937.

Agricultural activity in the Lower Shenandoah Valley declined during the late 20th century, resulting in a substantial decrease of farmland in many areas. The recent growth of towns, such as Middletown and Strasburg, along with highway development and limestone mining expansion, has resulted in the loss of open space and forested lands in the Lower Shenandoah. Figure 3.4 depicts the existing (2006) vegetative conditions and land use character of the park.

■ Land Use

In the open meadows found in the Lower Shenandoah, American Indians typically grew corn, beans, and squash, while Scots-Irish and German settlers grew wheat, rye, barley, oats, corn, flax, hemp, and tobacco. Although the emphasis in agricultural production evolved over time from a locally contained agricultural economy to regionally and nationally based markets, grain and livestock production

remained integral components of the landscape throughout the 18th and 19th centuries.

Various features in the park contributed to the cultural landscape within which the Battle of Cedar Creek was fought and thus provide an understanding of how the park lands were used by military forces. In effect, the network of towns, roads, bridges, farms, plantations, mills, and quarries that shaped the mid-19th century landscape, in conjunction with the natural terrain over which those features were draped, defined the area and setting of military action. The region's rolling topography, including Pout's Hill, Hupp's Hill, Three Top Mountain, Signal Knob, and Massanutten Mountain, allowed military personnel to survey and observe the surrounding lands and strategize for battle. The existing road network, including the Valley Pike, provided an efficient means of transporting soldiers up and down the valley. While Cedar Creek and the Shenandoah River formed natural defensive walls with steep ravines and slopes, the fords and bridges previously built for industrial and residential needs served as crossing points for both armies. As a result, locations of fords influenced the construction of defensive earthworks. The Bowman's Mill, McInturff's, and Bowman fords are fundamental resources from which the general contours of one of the most complicated and daring flanking maneuvers of the war can be interpreted. While the forested areas provided opportunities for concealment, the presence of open farmlands enabled large numbers of troops to gather for battle. Many of the buildings and structures in the valley were used for military housing, headquarters, and field hospitals. A line of earthworks established by the Union VIII and XIX Corps as part of their encampment defenses in October 1864 has been documented. Exceptions to this might be the Valley Pike Bridge that was repeatedly burned and rebuilt during the course of the war, and the Daniel Stickley Mill complex that was deliberately destroyed to prepare the Union field of fire. Figure 3.2 depicts the vegetation and land use character of the park for the year 1864.

During the late 19th and early 20th centuries, agricultural production slowly recovered from the large-scale destruction of farms and mills during the Civil War. Fields surrounding many previously identified settlements were enlarged and apple orchards and other farmsteads were developed in the area. By the early 20th century, the Lower Shenandoah experienced a phenomenal rise in apple production as apples replaced wheat as the primary cash crop and apple orchards dotted the landscape. Figure 3.3 depicts the vegetation and land use character of the park for the year 1937.

During the 20th century, mining for limestone, shale, sand, and crushed stone developed into an important industry in the Lower Shenandoah, resulting in the opening and operation of many quarries. Construction of the Manassas Gap Railroad to Strasburg in 1867 contributed to the later establishment of the Meadow Mills community and development of limestone quarries in its vicinity. Although

small-scale quarries, including the Conner Lime Kiln, were in operation during the early 20th century, large-scale quarry activity commenced after the 1930s. Figure 3.3 depicts the vegetation and land use character of the park for the year 1937.

Agricultural activity in the Lower Shenandoah Valley declined during the late 20th century, resulting in a substantial decrease of farmland and a corresponding increase of reforestation in many areas. Vineyard cultivation and cattle production have become the predominant agricultural activities in recent decades. The recent growth of towns, such as Middletown and Strasburg, along with highway development and limestone mining expansion, has resulted in the loss of open space and elements of the Lower Shenandoah's rural character. Figure 3.4 depicts the existing (2006) vegetative conditions and land use character of the park.

■ Circulation

The contemporary road system through the park is largely based on historic routes and patterns. Early roads were aligned based on functional need, proximity to natural landforms, and property lines. At a smaller scale, local roads were required to link families, farms and plantations, industrial sites, and towns.

Previously used by American Indians as a migratory route and for hunting, the major north-south trending route through the Shenandoah Valley, known as the Great Warrior Path and later as the Great Wagon Road and Valley Pike, became a major transportation corridor for European settlers. Because of its importance as well as its convenience, many European settlements were developed along this former American Indian trail.

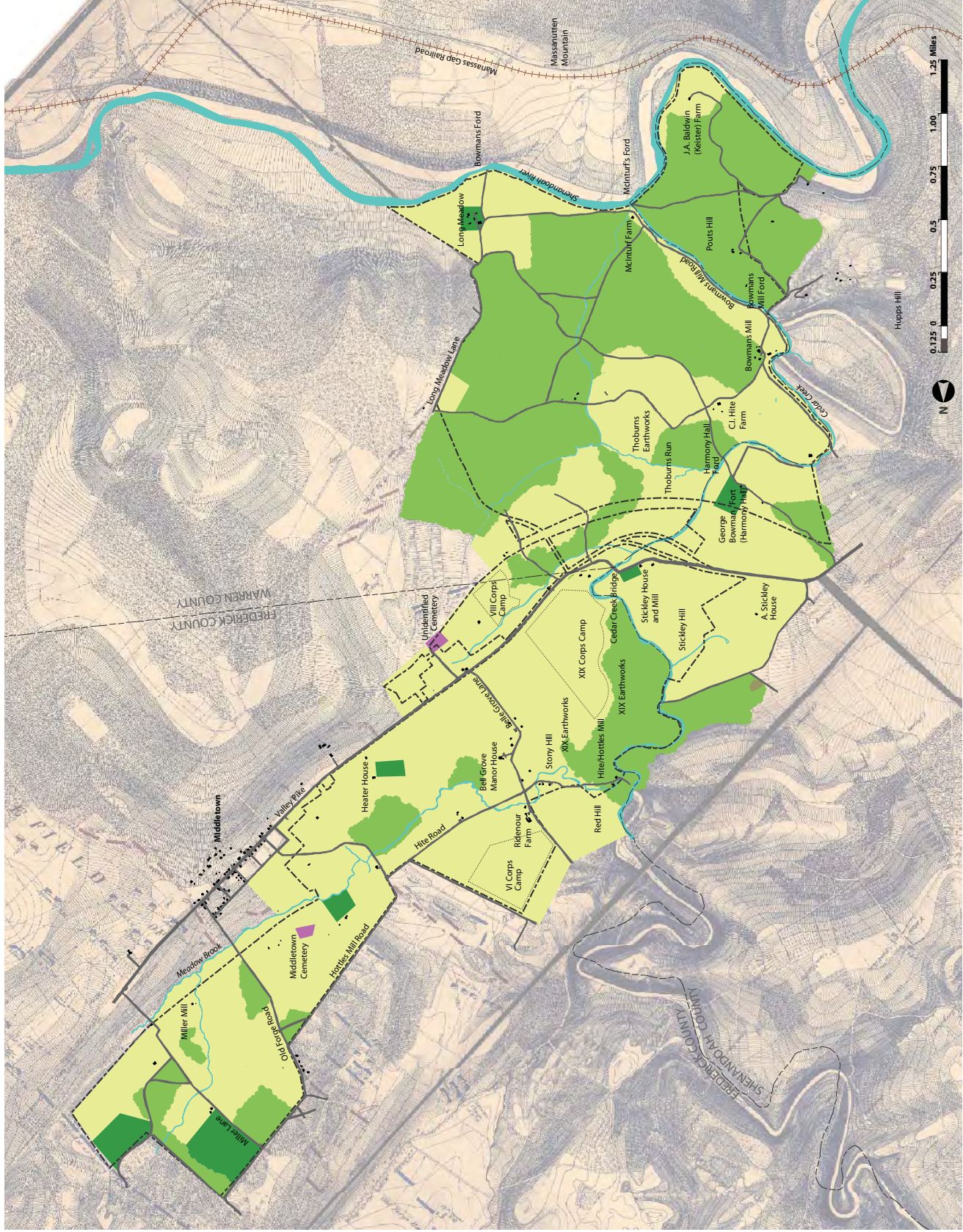
From the beginning, the Great Wagon Road and Valley Pike served as the transportation spine through the Shenandoah Valley. Eventually, roads would branch from it to form a network of transportation corridors, connecting settlements with individual farms, industry, towns, and major cities. In 1918 the Valley Pike was incorporated into the first Virginia state highway system. Designated initially as State Route 3 and later changed to State Route 11 in 1926, the road, which was realigned and widened in 1929, remained the regional north-south thoroughfare through the Lower Shenandoah until the completion, in 1971, of I-81 (which generally followed State 11). While I-81 became the major transportation corridor through the valley, subsequent construction of I-66, which connected the Washington, D.C., metropolitan area with I-81 between Middletown and Strasburg, led to increasing population growth in the Lower Shenandoah during the late 20th and early 21st centuries. Thereafter, State Route 11 was realigned as a secondary transportation route.

Most railroads built in Virginia before the Civil War were located east of the Blue Ridge Mountains and designed to connect the Piedmont with the Tidewater cities of eastern Virginia. Even with the construction of the Baltimore and Ohio Railroad in

Figure 3.2
1864
Land Use

- Forest/Woodland
- Field / Grassland
- Orchard
- Cemetery
- Quarry
- Building / Structure
- Road
- Railroad
- Stream / Creek / Water
- NPS Park Boundary
- County Boundary

Sources:
Background: Battlefields of Fisher's Hill and Cedar Creek (19 October 1864), Virginia. Prepared by Bvt. Lt. Col. G. L. Gillespie.
Additional Mapping by Mike Comisso, Olmsted Center for Landscape Preservation, January 2007



Cedar Creek and Belle Grove National Historical Park Virginia

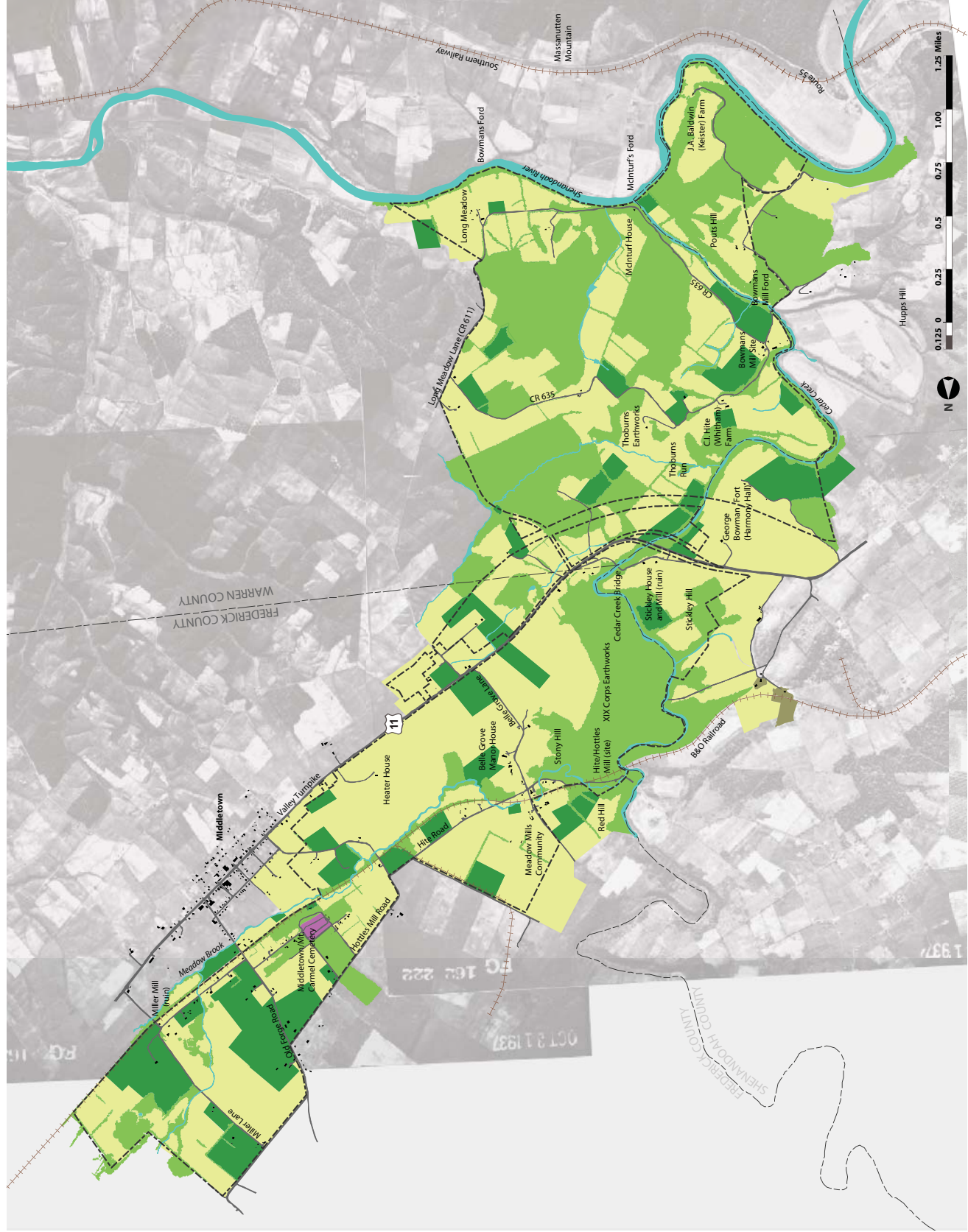
U.S. Department of the Interior
National Park Service

Figure 3.3
1937
Land Use

- Forest/Woodland
- Field / Grassland
- Orchard
- Cemetery
- Quarry
- Building / Structure
- Road
- Railroad
- Stream / Creek / Water
- NPS Park Boundary
- County Boundary

Sources:

Aerial: 1937 Aerial Photography, Virginia
Additional Mapping by Mike Comisso, Olmsted
Center for Landscape Preservation, January 2007



**Cedar Creek and Belle Grove
National Historical Park**
Virginia

U.S. Department of the Interior
 **National Park Service**

Figure 3.4
2002
Land Use

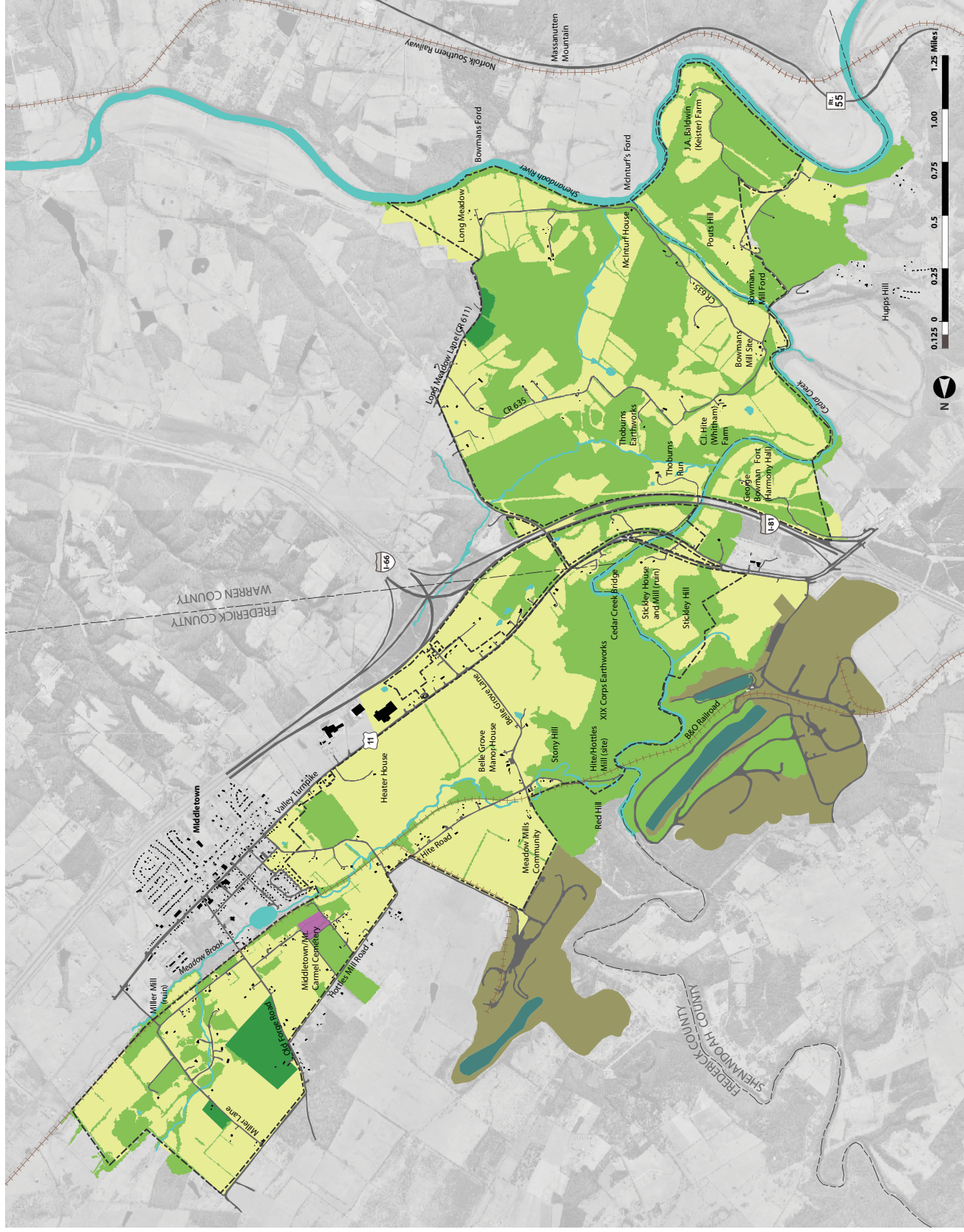
- Forest/Woodland
- Field / Grassland
- Orchard
- Cemetery
- Quarry
- Building / Structure
- Road
- Railroad
- Stream / Creek / Water
- NPS Park Boundary
- County Boundary

Sources:

Aerial: 2002 Aerial Photography, Virginia
Additional Mapping by Mike Comisso, Olmsted
Center for Landscape Preservation, January 2007
National Park Service

**Cedar Creek and Belle Grove
National Historical Park**
Virginia

U.S. Department of the Interior
 National Park Service



1834 and the Manassas Gap Railroad in 1854, the majority of the Shenandoah Valley remained underserved by railroads until after the Civil War. In 1867, the Winchester and Strasburg Railroad connected Harpers Ferry to the rail line stretching south to Harrisonburg. The rail line, which was constructed west of the Valley Pike in the park area, eventually became part of the Baltimore and Ohio Railroad network, and its location contributed to establishment of the community of Meadow Mills and its nearby limestone quarries.

■ **Building and Settlement Patterns**

Prior to European settlement, the Shenandoah Valley was occupied by various American Indian groups. Used as a central corridor for travel, migration, hunting, and planting, American Indian occupation was apparent throughout the valley based on the landscape features found by early European settlers. These features included fields, mounds, graves, and fire-cleared forests. Following American Indian precedents, European settlers located their dwellings in open areas near rivers and streams. In several instances, Europeans located their farmsteads, plantations, and settlements on abandoned American Indian sites.

Typical dwellings built in North America by early Scots-Irish immigrants were single-room dwellings constructed with stone located near adjoining fields containing gardens and crops. With the passage of time, however, the Scots-Irish adopted Germanic and Finnish log-building techniques. Many of the early more substantial dwellings, such as plantation homes, were constructed of limestone.

Prior to the Civil War the cultural geography of the park lands and contiguous areas was shaped by the emergence of highly profitable plantations and family farms. Dispersed along the turnpike between Middletown on the north and Strasburg on the south was Belle Grove Plantation, the Solomon Heater farm, and the Daniel Stickley Mill complex. East of the Valley Pike, roads physically connected settlements and towns, mills, and dispersed farmsteads. Adjoining these settlement clusters were open areas used for grain and livestock production. West of the Valley Pike, Belle Grove Lane, Hite Road, and two unnamed farm roads connected family farms and the Hottle Mill with the surrounding settlements and towns.

During the late 19th and early 20th centuries the Lower Shenandoah was the scene of a tremendous building boom. In addition to new construction, older structures were often enlarged and renovated using modern building techniques and styles. New communities, such as Meadow Mills, were established as a result of limestone quarrying and other economic activities, and towns such as Middletown and Strasburg grew in population as a result of railroad expansion and connections and the rise of the automobile era.

As a result of substantial growth and the construction of I-81 and I-66, the number of people moving to the Shenandoah Valley from the Washington, D.C. metropolitan

area and adjacent regions of West Virginia and western Maryland has increased significantly during the past several decades. During the post-World War II era, growth has occurred in many parts of the park area, especially along State Route 11 and Hite Mill Road. Currently, growth has affected the area west of I-81 more than the area to the east. The majority of recent development has occurred adjacent to Middletown, along State Route 11 and feeder roads that connect to Route 11. East of I-81, the primary growth pattern is widely scattered and found along Long Meadow and Bowman Mill roads. Development pressure is slowly occurring from Strasburg in the lower southeast portion of the park area.

■ **Views and Vistas**

Historic scenes as well as contemporary perceptual qualities also contribute to the significance of the landscape. These views, which are based on character-defining features of the cultural landscape, can be treated as tangible resources.

The complex landforms, natural and cultural landscapes, and pastoral views within and adjacent to the park, as well as the scenic mountain views and vistas that one obtains from the park, are among the most beautiful in the Lower Shenandoah Valley. While the region's scenic beauty is something to be celebrated, it also provides context and meaning to the park because virtually all human activities in the region have been inseparable from the lands on which they evolved. Although American Indians and subsequent European settlers were attracted to the region by its abundance of resources, the Lower Shenandoah's scenic beauty also may have likely served as an inducement for settlement. Thus, the views and vistas associated with the Lower Shenandoah are significant for the role they played in the region's developmental history. Many of these landscapes and viewsheds, particularly along major highways and near nodes of settlement such as Strasburg and Middletown, are being altered by increasing modern development, thus threatening the continued existence of significant features that contribute to the region's beauty and historical context.

■ **Small-Scale Features**

A variety of small-scale features found in the park add character and texture to the cultural landscape. Many of these features are associated with the Belle Grove Plantation as well as other plantations, homes, and farmsteads. Stonewall remnants associated with the Valley Pike, historic gates and fences, remnant orchards, hedgerows, building ruins, historic and commemorative monuments, such as the Ramseur Monument, and individual grave markers in cemeteries collectively give richness to the cultural landscape of the park.

By 1864 small family cemeteries were located on the Harmony Hall (Bowman Cemetery) and Long Meadow (Hite Cemetery) properties. A Hite family cemetery was located on the C.I. Hite (Whitham) property, and a slave cemetery was sited

north of the Belle Grove manor house overlooking Meadow Brook. In addition, two other identified cemeteries were located within the legislated park boundaries in 1864. These were the Middletown Cemetery (referred to as Mt. Carmel), located in the northeast section of the park, and an unidentified cemetery along Belle Grove/Long Meadow Lane. Although Civil War soldiers were buried in both cemeteries, the unidentified site along Belle Grove/Long Meadow Lane may have been used solely for that purpose. By 1937 the Mt. Carmel Cemetery, which had been expanded in size, was the only burial ground within the present-day park boundaries other than the small family cemeteries.

3.2.8 Museum Collections

Although the NPS currently does not possess any object, artifact, or archival collections relating to Cedar Creek and Belle Grove NHP, it is anticipated that archeological research will be conducted on NPS-administered lands in the future. Artifacts collected during that research, as well as associated materials, will result in park collections that require curation and preservation. A survey of the contents of the structures on the Hite-Whitham property should be conducted to identify potential government-owned artifacts. Additionally, during the life of the plan, the park may acquire lands that will likely generate collections that require management.

The park's Key Partners currently have collections of cultural resource objects, artifacts, and archives relating to the lands they own that have been compiled as a result of various archeological, historical, and architectural studies. The Cedar Creek Battlefield Foundation operates a visitor contact facility, with interpretive exhibits and a bookstore, in a commercial building on the heights along the Valley Pike overlooking the Cedar Creek Battlefield. The Shenandoah Valley Battlefields Foundation provides financial assistance to its partners for developing and expanding their interpretive, museum, and educational programs throughout the Shenandoah Valley Battlefields National Historic District.

The Belle Grove Manor House and surrounding grounds—owned by the National Trust for Historic Preservation and funded and operated by Belle Grove, Inc.—provide visitors with opportunities to experience a well-preserved 18th-century plantation, working farm, and architectural gem of the Lower Shenandoah Valley. All rooms in the manor house, which is operated as a historic house museum, contain objects and furnishings that are historically relevant to the Hite family or were characteristic of the Shenandoah Valley during the manor house's period of significance. In addition, Belle Grove maintains an extensive collection of research files, technical reports, and published works relating to historical development of the plantation. Belle Grove serves the Shenandoah Valley and Virginia as an educational center through the many interpretive programs it offers, and folkways

demonstrations maintain the presence of both the ethnic and Lower Shenandoah crafts heritage.

3.3 Natural Environment

As noted earlier, this chapter includes information on all natural resources and values for the park for the purpose of compiling this information for this first GMP. However, not all of the natural resources described here will be analyzed in the EIS portion of this document. The following resources and values may potentially be affected by the GMP alternatives: Soils, Groundwater, Surface Water Quality, Vegetation, and Scenic/Visual Resources/Viewsheds. The information presented here for these topics serves as the description of the Affected Environment in accordance with the requirements of the National Environmental Policy Act (NEPA). All other topics and information included in this section are presented as background but have been dismissed from further analysis in the EIS.

The park is mostly rural, but does contain incorporated, developed areas of Middletown and is influenced by adjacent development in Strasburg. The park consists of diverse biological communities, including forested uplands, open grasslands, and river valley bottoms. The park contains many streams and creeks and is bordered to the south by the North Fork of the Shenandoah River. In general, the park's landscapes are more natural and less disturbed to the south. The park's landscape features and natural setting have been identified as fundamental resources and values (NPS 2006a).

3.3.1 Topography

The topography of the area consists of long, parallel, narrow, even-crested ridges rising above intervening valleys of varying size. These elongated geologic structures produce a trellis (branching) drainage system, resulting in a relatively large number of streams occurring in the area. The park is situated in a valley that contains rolling uplands that are flanked by discontinuous ridges, bluffs, and foothills aligned in a northeasterly direction. Elevations in the park range between 500 and 700 feet (Donaldson 2005). The geography, topography, and landscape features of the region have been identified as fundamental values (NPS 2006a).

3.3.2 Climate

Considerable topographic heterogeneity in western Virginia induces a diversity of local weather conditions and microclimates. The climate of the Ridge and Valley province is moderate, being significantly warmer and drier than that of both the Blue Ridge and the mountains to the west. The average temperature in January is 32 degrees Fahrenheit (with an average low of 21 degrees), while summertime temperatures rise to an average of 75 degrees in July (with an average high of 88

degrees) (Weatherbase 2006). Prevailing westerly air masses are forced upward over the Appalachians and release most of their moisture on the windward side of the mountains, leaving the area in a “rain shadow” of the higher Alleghany ridges to the west. Annual precipitation averages about 35 inches. Of this, about 22 inches, or 63 percent, usually falls in April through September (USDA 1987). The growing season for most crops falls within this period. Average seasonal snowfall is just less than 30 inches (USDA 1984, 1987).

3.3.3 Air Quality

The park is a Class II area under the Clean Air Act. The park’s air quality met Environmental Protection Agency (EPA) standards in 2003 for airborne particulate matter (PM₁₀) and sulfur dioxide; however, ozone standards were exceeded that same year (Donaldson 2005). Currently, the area still is not in compliance with EPA standards for 8-hour ozone concentrations, but is in compliance for all other criteria pollutants (VDEQ 2006).

About 55 percent of the park’s total land area is in Frederick County, which participates in the EPA’s Early Action Compact (EAC) program that is designed to reduce ground-level ozone pollution. Communities with Early Action Compacts will start reducing air pollution one to at least two years earlier than required by the Clean Air Act. As long as EAC Areas meet agreed upon milestones, the impact of not being in compliance with EPA standards is deferred. Frederick County is required to meet ozone attainment standards no later than December 31, 2007 (EPA 2006).

3.3.4 Lightscape Management

As our cities and towns grow, the places where the public can find and enjoy clear views of our nighttime celestial skies are becoming fewer in number. Lightscape, or night sky, is an often overlooked part of the environment.

Light pollution is the visible intrusion of light into our nighttime environment. The source of much of this pollution can be attributed to poorly designed outdoor light fixtures that allow light to stray beyond the intended purpose. The impacts of poor nighttime lighting include urban sky glow (the brightening of nighttime skies and the decreased visibility at night), glare, the trespass of light, and wasted energy (International Dark Sky Association 2006). Light pollution can adversely affect night-flying migratory birds and other wildlife, and can impact visitor experience. The primary sources of light pollution are poorly designed building and roadway light fixtures and vehicle lights.

There are several sources of light that affect the park’s lightscape, or night sky conditions. I-81 and U.S. 11 contribute unnatural light due to vehicle headlights. Trains contribute unnatural light as well. The Chemstone Plant, adjacent to park lands, is a significant source of light pollution. Nearby residential developments,

industrial parks, and the towns of Middletown and Strasburg also contribute additional light that is visible from the park and disrupts night sky viewing. Facilities in the park also contribute minimal light. Nearly all of the park is affected by non-natural sources of light; however, night sky conditions in portions of the interior of the southern half of the park are less disturbed.

3.3.5 Soundscape Management

Soundscapes include both natural and human components. Natural soundscapes include all naturally occurring sounds such as waves on the shoreline, running water, bird calls, wind blowing through trees, or thunder. It also includes “natural quiet” that occurs in the absence of natural or human-caused sound. The opportunity to experience natural sounds or natural quiet is an enjoyable part of some visitor experiences at the park.

Noise is generally defined as unwanted or intrusive sound. Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Many factors affect how an individual responds to noise. In most cases, when noise is present in a park, it is considered a mild aggravation but in other cases that noise can disrupt the quality of a visitor’s experience. Through the study of acoustic ecology, it has been determined that noise also has the potential to alter wildlife behavior and is important to species survival. Noise can also detract from the portrayal of historical events and in some circumstances alter the physical condition of park resources.

Nearly all of the park is affected by non-natural sounds. Several sources of intrusive sounds exist within and around the park. The major source of noise is attributed to vehicles on roads that pass through the park. I-81 and U.S. 11 bisect the park and contribute erratic, but permanent, sounds from highway traffic that can be heard from many areas of the park. Noise intrusions are greatest at sites that are immediately adjacent to the I-81 corridor, such as Harmony Hall. The expansion of I-81 through the park would contribute additional noise pollution during construction. In addition, trains that pass through the park can be heard throughout the park. The limestone quarry that is adjacent to the park probably also affects conditions for natural quiet within the park due to blasting and the operation of heavy equipment.

Maintenance activities, such as lawn mowing and leaf blowing, can produce noise and disrupt natural quiet in the park. Other sound disruptions could be created by visitors talking and shouting, primarily around developed areas like visitor contact facilities and popular interpretive sites; sounds generated during reenactments such as the firing of cannons and guns, and cavalry activities could be disruptive, as well. The presence of natural quiet and the natural soundscape is probably greatest in portions of the interior of the southern half of the park.

3.3.6 Scenic/Visual Resources/Viewsheds

Scenic resources and viewsheds are important elements of visitor experience. Natural landscapes and panoramic views, particularly of Massanutten Mountain, the Blue Ridge Mountains, and the Allegheny Mountains that flank the Shenandoah Valley, have been identified as fundamental to the park's purpose and significance (NPS 2006a). Scenic resources define the park's contextual setting and contribute to the integrity of the park's battlefields and other cultural resources. The once predominantly agrarian and rural landscape of the area is changing and rural and suburban development is slowly claiming the pastoral landscape.

The park's scenery is defined by a rural, pastoral landscape that is punctuated by elements of the built environment, such as plantation homes, farmsteads, church spires, and small town streetscapes. Interesting patterns of agricultural fields and woodlots add to the charm and quality of the area, while views of the many creeks and streams that flow through the park display its rich natural heritage. These natural features and vegetative patterns have been identified as fundamental values and other important values, respectively (NPS 2006a). In the southern portion of the park, views of Signal Knob and other prominent ridges and natural features typify the open landscape that was instrumental in the battles that took place there.

The park's scenic qualities are affected by a variety of permanent structures and land use activities within and adjacent to the park. Some of these structures, such as historic plantation homes and farm buildings, contribute to the pastoral landscape and scenic views. Others, like the towering Burger King sign along I-81 and the backdrop that the Chemstone Quarry and recent commercial developments provide, negatively impact the park's viewshed. Also impacting the park's scenic views are I-81, I-66 and other roadways, a railroad, an industrial business park, and expanding residential and commercial developments. In some areas, forested buffers help to block intrusive views; however, many of the permanent structures and activities are visible from the battlefield and other areas of the park (Lowe 1995). The section of the park south of I-81 probably has the highest visual integrity due to minimal access (Lowe 1995).

The expansion of transportation corridors in the park and in the region, in particular I-81, will affect the scenic qualities of the park. Increasing commercial and residential development in the area will also impact viewsheds in the park over time.

3.3.7 Geologic Resources

The park is located within the Ridge and Valley physiographic province. This province is characterized by folded beds of sedimentary rock that were deposited in the Iapetus Ocean during the Paleozoic Era and form long, narrow, parallel ridges and valleys (Scotese 2003). Generally, sandstones compose the ridge tops and carbonate rocks such as limestone form the valleys. The park is located in the Valley of Virginia, one of two subregions of the Ridge and Valley province. The

Valley of Virginia is a regional name for the larger Great Valley, which stretches from New York to Alabama (Woodward 1997).

The park includes six main geologic formations, most of which were deposited in the shallow, tropical, Iapetus Ocean that existed for at least 70 million years (Roberts 2003). Some of these formations are fossiliferous, and others produce high calcium limestone that is quarried in the area. The younger alluvium and terrace deposits occur along the floodplains of streams and rivers, particularly in the southern portion of the park, and consist of deposits of sand, silt, and clay with minor amounts of rounded gravel. The limestone geologic system of the region has been identified as an important park value (NPS 2006a).

■ **Karst Features**

The dissolving of the carbonate rocks that underlie the park results in karst topography (Woodward 1997). Karst topography is typically identified on the ground surface by features such as cave openings, sinkholes, sinking streams, and springs. Caves in the area have the potential to host rare invertebrates and vertebrates.

Karst features are more commonly found outside the park boundary; however, there are a few examples inside the park. Panther Cave, located along the banks of Cedar Creek, is a prominent feature in the park and is a representative example of karst topography. Panther Cave has been designated a “Significant Cave” by the Virginia Cave Board due to its archaeological significance. Panther Cave is located on a steep stream embankment and is accessible only from Cedar Creek.

Sinkholes increase in size and become more abundant near incised (entrenched) streams. This is evident along Cedar Creek and the North Fork of the Shenandoah River. The greater development of sinkholes near streams has been attributed to the steepened hydraulic gradient and increased rate of ground water flow in these areas (Orndorff 2002). The difference in elevation between the surface of the ground and the stream level causes this phenomenon. Sinkholes are unique features that provide niche habitats and affect drainage networks in the area. A sinkhole complex located along the western boundary of the park near the Meadow Mills area is considered significant and has the potential to host rare natural resources (Orndorff 2006). One of the sinkholes is within the park; two others are located to the northwest just outside of the park boundary. There are no cave openings at these sites. Ogdens Cave, located about one mile north of this area, was recently acquired and protected by the state of Virginia because of its rare fauna. The Meadow Mills sinkhole complex is believed to have similar geologic and hydrologic conditions and, therefore, has the potential to host rare and endemic species (Orndorff 2006). Endemic species are those that are restricted to, or native, to one particular region.

3.3.8 Paleontological Resources

Geologic formations in the park are composed of parent material that contains paleontological resources. No formal resource inventories have been conducted in the park; however, the Valley and Ridge province is known to be fossiliferous. These fossils are typically well below the surface; however, some fossils in the area are exposed where road cuts and rock outcrops occur. Preliminary research indicates that the greatest potential for paleontological resources is on private property within the authorized park boundary or just outside of the park.

3.3.9 Soils

A variety of soil types exist in the park. Soils in the northern portion of the park were weathered from limestones and dolomites, which have high calcium carbonate content. These soils have a much higher capacity to buffer acidic water than those in the southern half of the park. The southern soils are weathered from sandstones, siltstones, and acidic shales, which have low calcium carbonate content.

In Frederick County, the soils were formed in material weathered from limestone; are located on terrain that ranges from gently sloping to steep; and are deep and well drained with fine textured subsoil. The major soil associations found in the park in Frederick County are Oaklet-Carbo-Chilhowie and Frederick-Poplimento-Oaklet. These soils occur in valley uplands that are dissected by drainages. The majority of the areas where these soils can be found have been cleared for agriculture use (USDA 1987). Those areas that have not been cleared generally are steep and rocky and have remained in mixed hardwoods.

In Shenandoah County, the major soil associations found in the park are Chilhowie-Carbo-Endcav, Weikert-Berks-Laidig, and Lehew-Gainesboro, Unison-Moomaw-Braddock. These soils are found in varying topographic environments with varying parent materials, including limestone-shale uplands, colluvial shale or sandstone found on uplands and mountain side slopes, and alluvial materials found on river terraces (USDA 1991). These soils range from gently sloping to steep; and are mostly deep and well drained with a loamy or clayey subsoil.

In Warren County, the soils were formed in residuum of shale and sandstone on uplands. They range from gently sloping to very steep; are shallow to deep; and are somewhat well drained with a loamy or clayey subsoil (USDA 1984). The major soil associations found in the park in Warren County are Berks-Blairton-Weikert and Berks-Weikert-Sequoia. Areas with these soils consist of hills and ridges with short to medium, smooth slopes that are highly dissected by small streams.

The park's valley soils are considered to be highly fertile and productive. The rich soils and natural resources of the area were what attracted early European settlers to the region, and allowed the Shenandoah Valley to be used for farming since the early 1700s (Heritage Partners, Inc. 2000).

Some areas of the park also contain hydric soils that may support wetlands. Hydric soil is defined as “a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (USDA 1991). Though the individual soil series within the park are not considered hydric, those series with flooding could have hydric soils in areas that are saturated.

Highly erodible soils as well as potentially highly erodible soils appear to be scattered throughout the park. Soils that are not highly erodible are located mainly along floodplains of streams and rivers where slopes are minimal.

Many of the soils in the park have been disturbed and altered. The causes of these changes include changes in vegetation, cultivation practices, grazing by non-native animals, and the construction of roads, residences, and other structures. Natural and human-caused soil erosion also has likely affected the park’s soils.

Most of the soils in the park have limitations for building and recreational development. In general, limitations on building site development range from moderate to severe due to issues with depth to bedrock, slope, clay content, wetness, shrink-swell potential, low strength, and the presence of large stones (USDA 1991, 1987, 1984). Limitations on picnic areas range from moderate to severe due to slope, slow percolation, wetness, and the presence of small stones. Limitations for paths and trails range from slight to severe due to slope, the potential for erosion, and the presence of large stones (USDA 1991, 1987, 1984).

3.3.10 Prime and Unique Farmlands

Prime farmlands are defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Prime farmlands have the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Prime farmlands are based on mapped soil types and are scattered throughout the park, primarily in floodplains. They represent approximately 15 percent of the park (Figure 3.5).

Unique farmlands are lands other than prime farmland that are used for the production of specific high value food and fiber crops. No unique farmlands have been identified in the park.

The park also contains farmland of statewide importance, which represents about 40 percent of the park (Figure 3.5). Farmland of statewide importance includes

Figure 3.5

Prime Farmland and Farmland of Statewide Importance



soils defined by the state that are nearly prime and produce high crop yields when treated and managed according to acceptable farming methods.

Prime farmland and farmland of statewide importance generally occur in the northern portion of the park and appear to exist over more alkaline soils created from Pinesburg Station Dolomite and the Rockdale Run Formation (undivided) and the Edinburg Formation, Lincolnshire Limestone, and New Market Limestone (undivided).

3.3.11 Water Resources

The park is located within the watershed of the North Fork of the Shenandoah River, which drains approximately 3,000 square miles. The North Fork of the Shenandoah River drains into the Potomac River, which is part of the larger 64,000 square mile Chesapeake Bay watershed. The park contains over 19 miles of streams and rivers, including several major ones like Meadow Brook, Stickley Run, Cedar Creek, and the North Fork of the Shenandoah River (Figure 3.6). The park also contains numerous intermittent streams that are scattered throughout the park, many of which are unnamed. Surface water is limited to the waterways mentioned above, along with a few ponds or impoundments created for agricultural purposes. Subsurface water resources include groundwater and the Conococheague aquifer that underlies the park. Water resources are vital to plant and animal life, contribute to recreational opportunities, and provide water for agricultural production and domestic water supply. Hydrology, water quantity, and water quality are important parameters to be considered for both the park and the region.

■ Groundwater

Subsurface waters include groundwater and the carbonate aquifer system of the northern Shenandoah Valley. The aquifer that underlies that park is referred to as the Conococheague aquifer, probably because it is partly located within the Conococheague geologic formation. The hydrogeology of the Conococheague aquifer is complex. The movement of groundwater through the aquifer is determined by a large number of variables, including rates of surface recharge, topography of the land surface, and the thickness and conductivity of rock layers within the aquifer. Movement of groundwater also is affected by numerous faults and folds in the aquifer.

The primary source of recharge to the Conococheague aquifer is precipitation that infiltrates the land surface. Some recharge also occurs through streambeds. The depth to water in the aquifer varies with location and season. Depth to the high water table ranges from 30 to 450 feet (USDA 1987). Discharge from the aquifer occurs as spring flows, base flow to streams, artesian well flow, and evapotranspiration. In places where limestone dominates in the Valley and Ridge

province, ground water yields can be as high as 3,000 gallons per minute (Virginia Water Resources Research Center 2002).

Groundwater is a major source of water supply for the area - over half of Frederick County residents rely on it as their sole source of domestic water (Frederick County 2003). Groundwater emerges as seeps or springs where the folded and faulted Risking Formation or other permeable bedrock comes into contact with less permeable strata such as the Marcellus shales (Bousquet *et al.* 2004). The flows of springs in the park have naturally fluctuated over time. Groundwater levels and spring flows vary in response to changes in precipitation. Currently, existing water sources and ground water barely meet the demands for water by area residents and farmers (Heritage Partners, Inc. 2000). Water supplies are under great pressure, and population growth in the region is exacerbating the problem. The future availability of water is a concern for area residents. The susceptibility of the area's groundwater, and thus the aquifer, to contamination due to the geologic conditions of the area further contributes to the concern about groundwater quality impacts.

■ **Surface Water Quantity**

Surface water quantity in the area is measured by the United States Geologic Survey (USGS). They have three gauging stations in place on streams and rivers near the park: two on Cedar Creek (one in Frederick County and one in Warren County), and one on the North Fork of the Shenandoah River in Warren County. Flow measurements on Cedar Creek indicate that the highest discharges generally occur from February to June, when flows exceed 100 and even 200 cubic feet per second (Donaldson 2005). The lowest flows on Cedar Creek generally occur from July to December, when discharges do not exceed 100 cubic feet per second. Flow measurements on the North Fork of the Shenandoah River indicate that the highest discharges generally occur from February to April, when flows exceed 1,000 cubic feet per second (Donaldson 2005). The lowest flows on the North Fork generally occur from July to September, when discharges rarely exceed 400 cubic feet per second.

■ **Surface Water Quality**

Water quality plays a major role in the importance of the area's water resources; water quality is essential for public health and the protection of the natural environment. Streams within the park are located within the North Fork of the Shenandoah River watershed, which is a part of the larger Chesapeake Bay watershed. The Chesapeake Bay watershed's biggest water quality problem is nutrient pollution from nitrogen and phosphorous, primarily from nonpoint sources. Two monitoring stations used to assess impairment of waters are located near the park: one is on Cedar Creek about seven miles upstream of the park boundary, and the other is on the North Fork of the Shenandoah River about ¾ mile from the southwest corner of the park.

Impaired waters, as defined by Section 303(d) of the federal Clean Water Act, are those waters that are not meeting the state's water quality standards (quantitative, numeric criteria or qualitative criteria including use designations). Every two years, states are required to submit a list of impaired waters to EPA for approval. The state of Virginia's list of impaired waters for the year 2004 did not include any stream reaches located in the park. Portions of Cedar Creek (upstream of the park) and the North Fork of the Shenandoah River (downstream of the park) are classified as impaired due to problems with PCBs, fecal coliform, elevated water temperature, organic enrichment, and other factors (VDEQ 2004).






Inside the park, Meadow Brook, a tributary to Cedar Creek, is considered to be of poor water quality (Bousquet 2004). According to fish sampling and field inspection that took place during the summer 2004, water quality was considered to be severely degraded; this was attributed to suburban and agricultural influences (Bousquet 2004). The Cedar Creek watershed has been identified as a fundamental resource that is essential to maintaining the significance of the park (NPS 2006a). It is valued for its important riparian areas and high-quality stream habitat. Periodic chemical and physical sampling of Cedar Creek indicated that it is one of the two cleanest streams in Shenandoah County (Friends of Shenandoah River 2003). Fish sampling in the park on Cedar Creek near Hupp's Hill (approximately two miles upstream of the junction with the North Fork of the Shenandoah River) in the summer 2004 confirmed that water quality is good and is comparable to reference streams that are considered to be minimally degraded (Bousquet 2004). Several species of freshwater mussels are present in waters of the park and the region, which is indicative of good water quality (VDCR 2006).

Potential sources of water pollution in the area include both point and nonpoint sources, such as runoff and spills of fuel, oil, or other hazardous materials on the roads, railroads, and highways that pass through the park; leaks from commercial and domestic sewer lines and septic systems in the area, as well as regulated storage tanks; disposal of household hazardous waste; runoff from adjacent lands that have commercial and agricultural activities; and runoff from adjacent residential areas that use lawn chemicals (e.g., fertilizer, pesticides, and herbicides). The likelihood of polluting water sources in a karst landscape is increased because sinkholes and other karst features have direct connections to subsurface waters.

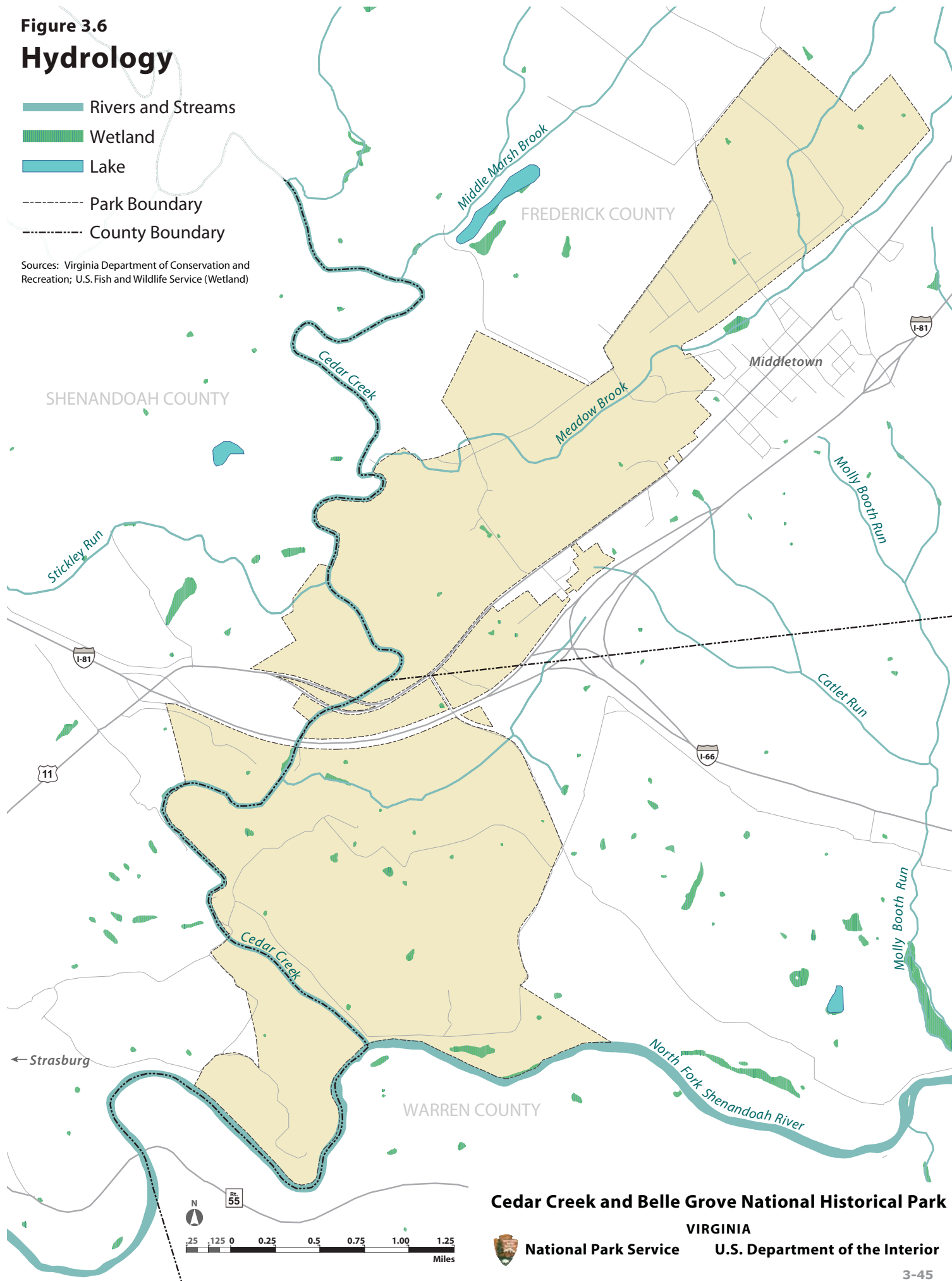
■ **Wetlands**

Wetlands are scattered throughout the park, with the highest concentration occurring in the southern third of the park (Figure 3.6). Figure 3.6 displays National Wetlands Inventory (NWI) data according to the Cowardin classification system. There are four categories of wetlands in the park: freshwater emergent, freshwater forested/shrub, freshwater pond, and riverine (Donaldson 2005). According to digitized NWI data, there are approximately 76.4 acres of wetlands in the park, with

Figure 3.6
Hydrology

-  Rivers and Streams
-  Wetland
-  Lake
-  Park Boundary
-  County Boundary

Sources: Virginia Department of Conservation and Recreation; U.S. Fish and Wildlife Service (Wetland)



Cedar Creek and Belle Grove National Historical Park

VIRGINIA



National Park Service

U.S. Department of the Interior

the majority (52.7 acres) being riverine wetlands (Donaldson 2005). Wetlands in the park are generally restricted to fringe wetlands around farm ponds, emergent wetlands near springs and seeps, and forested wetlands along floodplains. Much of the wetland vegetation in the park has been altered by livestock, agricultural, and flood control activities.

■ **Floodplains**

The park contains several streams and rivers that have floodplains. It is believed that certain areas of the park are within 100-year flood zones. Due to the limitations of available floodplain data for the three-county area, and the inconsistencies in the level of detail and accuracy of the floodplain data that exists, the location and extent of floodplains is not known. The park's streams and rivers are subject to flooding following major storms and/or rapid snow melt. The floodplains of these drainages have been substantially modified by past agricultural and flood control activities, but the streams and rivers still contain important habitat for fish and wildlife, as well as for recreational uses. Efforts have been underway in the area to protect native riparian vegetation and to allow natural processes to occur.

■ **Wild and Scenic Rivers**

Virginia contains no federally designated Wild and Scenic Rivers; however, a segment of Cedar Creek (at milepost 300 on I-81 at the Shenandoah and Frederick County line) is on the Nationwide Rivers Inventory (NRI), a national listing of river segments potentially eligible for inclusion in the National Wild and Scenic River System (FHWA 2005). The state of Virginia has also indicated that the U.S. Forest Service identified Cedar Creek and the North Fork of the Shenandoah River as eligible for study for federal Wild and Scenic River designation (VDCR 2007).

The state of Virginia has considered both Cedar Creek and the North Fork of the Shenandoah River for inclusion in the Virginia Scenic Rivers Program. Neither of these streams has been designated as a "Scenic River". Cedar Creek is described as "Worthy of Further Study" and designated a "Potential Component". The North Fork of the Shenandoah River, down to the confluence with Cedar Creek, is described as "Qualified, but Not Yet Joined" and is designated as a "Qualified Component". The North Fork of the Shenandoah River downstream of the confluence with Cedar Creek is described as "Worthy of Further Study" and is designated as a "Potential Component".

3.3.12 Vegetation

The vegetation and land use of the Lower Shenandoah Valley has changed over time, moving from heavily forested land to an open, agricultural setting and then back again to a mostly forested environment. Figures 3.2, 3.3, and 3.4 illustrate the changes in vegetative composition that have occurred over the last 150 years.

The natural vegetation of Virginia's Appalachian region was formerly characterized by various mixtures of oaks (*Quercus* sp.) and American chestnut (*Castanea dentata*), with smaller inclusions of mixed mesophytic forest in coves, ravines, and other fertile sites (Braun 1950). During the 18th century, the landscape was heavily forested, consisting mostly of oaks and hickories in fertile areas with scattered pines and conifers in sandy and stony soils.

By the late 19th and early 20th centuries, forest cover declined due to extensive clearing for pasture and agricultural use. Fields were enlarged and apple orchards were developed in the area. Following the elimination of the American chestnut due to an introduced fungal blight in the 1930s, the region has been mostly described as mixed oak forest. There is little evidence that chestnut was important in forests typical of the carbonate (limestone and dolomite) substrates of the region, and the general vegetation of limestone or dolomitic valley slopes in Virginia may be closer to an oak-hickory forest community.

By the late 20th century, agricultural activity had declined, resulting in a substantial decrease of farmland and a corresponding increase of reforestation in many areas. Today, the park supports a variety of vegetative communities, including forests and woodlands, grasslands, and riparian and wetland areas (Figure 3.7). A modest amount of the park is in agricultural production. Common row crops in the area include corn, wheat, oats, and barley. Orchards in the area typically grow apples and peaches. Pastures in the area produce grass hay crops or are used for grazing. Most of the farm acreage in the park today is used for hay production and pasture. Crops grown in the region over time have been identified as an important park value (NPS 2006a).

Vegetation is important because it provides wildlife habitat, protects riparian corridors that minimize flooding and improve water quality, and buffers air quality. The recent exclusion or suppression of fire has affected some of the vegetative communities of the region. In particular, the xeric woodlands are currently undergoing structural and compositional alterations (Virginia Division of Natural Heritage 2006).

Factors that have affected natural communities in the area include logging and cattle grazing, and the expansion of exotic and invasive plants and forest pests. The effects of land fragmentation due to population growth and increased development, including the expansion of transportation corridors, continues today and has compromised the richness and integrity of the park's biological communities.

■ Forests and Woodlands

Forests and woodlands comprise approximately 40 percent of the park, with the majority occurring in the southern half of the park. The park's forests and woodlands are dominated by mixed deciduous hardwoods, with occasional conifers

adding to the forest canopy. At least 46 deciduous and angiosperm tree species may exist within the park (Donaldson 2005). Major forest communities include upland forests (both mesic and xeric) and bottomland forests that are found in floodplains.

Upland mesic forest is comprised of tree species such as white oak (*Quercus alba*), red oak (*Quercus coccinea*), red hickory (*Carya ovalis*), pignut hickory (*Carya glabra*), bitternut hickory (*Carya cordiformis*), white ash (*Fraxinus americana*), chinquapin oak (*Quercus muhlenbergii*), and redbud (*Cercis Canadensis*). The shrub layer is comprised of species like fragrant sumac (*Rhus aromatica*), dogwood (*Cornus florida*), hop hornbeam (*Ostrya virginiana*), and downy serviceberry (*Amelanchier arborea*). The herb layer includes such species as Enchanter's nightshade (*Circaea quadrisulcata*), wild ginger (*Asarum canadense*), shining bedstraw (*Galium concinnum*); woody vines such as Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*); and woody seedlings of common forest trees. Upland mesic forests are uncommon in the region and in the park today because so much of the Shenandoah Valley has been settled and farmed.

Upland xeric forest is comprised of tree species such as red oak, shumard oak (*Quercus shumardii*), Virginia pine (*Pinus virginiana*), white ash, eastern red-cedar, and dogwood. The shrub layer is comprised of species like fragrant sumac, hop hornbeam, and fringe tree (*Chionanthus virginicus*). The herb layer includes such species as shale barren golden rod (*Solidago harrissii*), nodding onion (*Allium cernuum*), golden star (*Chrysogonum virginianum*), pearly everlasting (*Antennaria plantaginifolia*), and round-leaved ragwort (*Senecio obovatus*). Upland xeric forests can contain rock outcrops and limestone bluffs that support unique ecological communities.

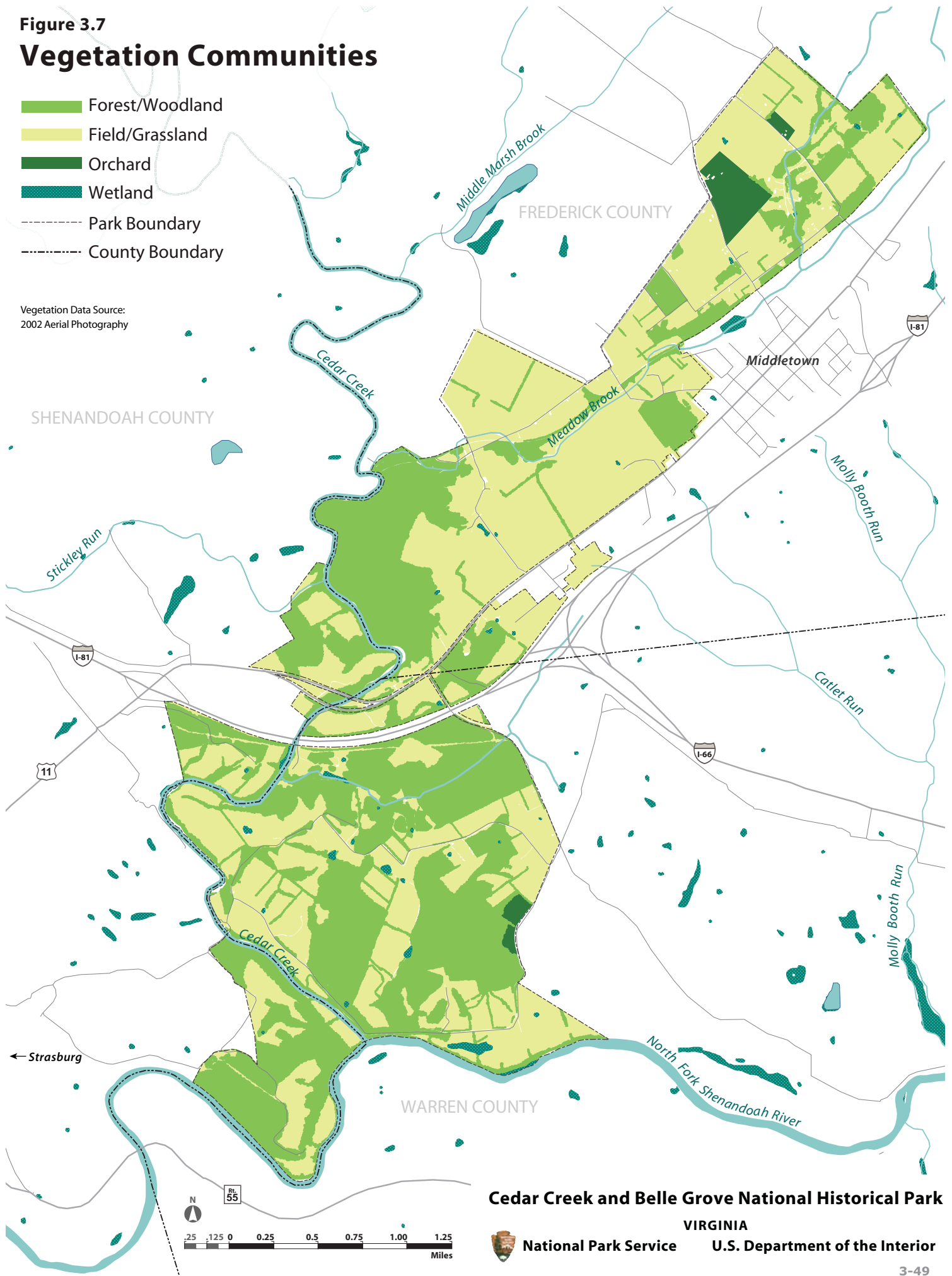
Historically, forested bottomlands were much more common in the area, but have been dramatically reduced due to clearing and conversion to farms. Bottomland forest is comprised of tree species such as red oak, tulip poplar (*Liriodendron tulipifera*), American sycamore (*Platanus occidentalis*), chinquapin oak, bitternut hickory, and the uncommon shumard oak. The shrub layer is comprised of species like spicebush (*Lindera benzoin*), wineberry (*Rubus phoenicolasius*), Japanese honeysuckle (*Lonicera japonica*), and pawpaw (*Asimina triloba*). The herb layer is typically dense and diverse, including such species as wild ginger (*Asarum canadense*), scotchmist (*Galium sylvaticum*), and seedlings of common forest trees. Spring ephemerals, or wildflowers, are also a major component of the forest floor, including species such as Virginia bluebells (*Mertensia virginica*), toad trillium (*Trillium sessile*), bloodroot (*Sanguinaria canadensis*), early meadow rue (*Thalictrum dioicum*), and Canada violet (*Viola canadensis*). The southern portion of the park, near the junction of Cedar Creek and the North Fork of the Shenandoah River, contains a representative example of this productive forest community.

Figure 3.7

Vegetation Communities

- Forest/Woodland
- Field/Grassland
- Orchard
- Wetland
- Park Boundary
- - - - - County Boundary

Vegetation Data Source:
2002 Aerial Photography



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National Park Service

U.S. Department of the Interior

Forest and woodlands in the park have been logged and the present day forest canopy is thought to be at least third generation. Most of the forest and woodland cover is less than 24 inches dbh (diameter at breast height). There are no active logging operations in the park. In general, the steeper slopes in the park contain the larger and presumably older trees. The forested riparian corridors contain large, mature trees, but their extent is limited.

Forest pest threats include the fall cankerworm, gypsy moth, and hemlock woolly adelgids, all of which have impacted forests in the nearby region (VDOF 2002). Although impacts to forest cover in the park have not been documented, there are documented defoliations as near as four miles from the park.

Forest fire risk in the park is generally considered to be medium (VDOF 2003). The Virginia Department of Forestry used GIS to map residential communities, distance to fire stations, and high risk forest areas to arrive at this determination. The central part of the park and the northern boundary were considered low risk, while the southern boundary and parts of the northern portion of the park were considered high risk.

■ Grasslands

Grasslands account for about 50 percent of the park and include pastures, old fields, and meadows that are used primarily for cattle grazing and hay production. Dominant plants include fescue grass (*Festuca* sp.), thistle (*Carduus* sp.), black-eyed Susan (*Rudbeckia heliopsidis*), blackberry (*Rubus* sp.), goldenrod (*Solidago* sp.), sheep-sorrel (*Rumex acetosella*), plantain (*Plantago* sp.), broome straw (*Andropogon* sp.), and vetch (*Vicia* sp.) (FHWA 2005). Primary grasses and legumes found in improved agricultural areas (for pasture and haying) include fescue, orchardgrass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pretensis*), clover (*Trifolium* sp.), and alfalfa (*Medicago sativa*) (USDA 1991, 1987). Fence rows and abandoned fields often contain high concentrations of eastern red-cedar trees. Although native, these shrubby trees are invasive and often colonize open grasslands.

Nearly all of the park's grasslands are used for agriculture. Fields in the park are also used as orchards for growing fruit crops, and to a lesser extent for growing row crops such as corn for silage. Although actively cultivated and/or manipulated, these areas provide wildlife habitat when managed properly. Current management of grasslands in the park is variable since they are privately owned and managed. Prescribed fire would not likely be a tool for grassland management since most grasslands are privately owned, are often utilized for year-round grazing, and are situated in a residential interface. Grasslands north of I-81 owned by the park partners present the best opportunities for addressing grassland related preservation objectives.

■ Riparian and Wetland Areas

Riparian and wetland areas make up less than 10 percent of the park, but are essential resources that contribute to the area's biological diversity. A large number of streams occur in the park, providing ribbons of riparian vegetation. These riparian areas contain trees, shrubs, and grasses that are water tolerant. Approximately 76 acres of wetlands exist in the park (Donaldson 2005). Wetlands are scattered and are generally restricted to fringe wetlands around farm ponds, emergent wetlands near springs and seeps, and forested wetlands along floodplains (Figure 3.6). Close to 60 percent of the park's wetlands are riverine wetlands that occur along the banks and in the floodplains of streams and rivers (Donaldson 2005). The highest concentration of wetlands occurs in the southern third of the park. Typical wetland plants include smartweed (*Polygonum amphibium*), arrowhead (*Sagittaria latifolia*), pickerel weed (*Pontederia cordata*), wild millet (*Pennisetum* sp.), wild rice (*Zizania aquatica*), saltgrass (*Distichlis spicata*), cordgrass (*Spartina* sp.), skunk cabbage (*Symplocarpus foetidus*), spotted jewelweed (*Impatiens capensis*), and various rushes (*Juncus* sp.), sedges (*Carex* sp.), and reeds (USDA 1984, 1987). Much of the wetland vegetation in the park has been altered by livestock, agricultural, and flood control activities. In recent times, there has been increased focus on riparian area preservation and enhancement.

■ Rare Plants

The geology of the area supports rare plants. The term "rare plant" is not synonymous with classification as a threatened and endangered species and does not confer any special regulatory protection; however, rare plants require special attention in resource planning and protection efforts.

Dry, south- or west-facing shale slopes in the rain-deprived Ridge and Valley province can support several types of xerophilic vegetation, including the well known, but rare, shale barren communities. Shale barrens contain exposed rock outcrops that can host endemic plants such as bent milkvetch (*Astragalus distortus*), which has been documented in the area (Orndorff 2006). Seeps and cold spring runs in the area can support relict species from the glacial period. Areas of limestone bedrock (unexposed) can host distinctive species such as the prairie ragwort (*Senecio plattensis*) and rare species such as the pubescent sedge (*Carex hirtifolia*).

Field work was conducted in the Cedar Creek watershed during the summer 2004 by Shenandoah University and the Virginia Division of Natural Heritage. Several of their survey plots were within the park boundary and produced documentation of sensitive plants as well as new records for plants previously thought not to exist in the local area. The globally rare Canby's Mountain-lover (*Paxistima canbyi*) was perhaps the best find – occurring on a limestone bluff just west of Middletown. Canby's Mountain-lover is a creeping evergreen shrub that grows in small clumps at

the brow of partly shaded limestone cliffs. Canby's Mountain-lover is listed as a federal species of concern (USFWS 2005). Three plants that appear on the state of Virginia's Rare Vascular Plant List were also found in the course of Shenandoah University's field work within the park: lance-leaved buckthorn (*Rhamnia lamnaceolata*), balsam ragwort (*Senecio pauperculus*), and pubescent sedge. The Rare Vascular Plant List is the equivalent of a watch-list for rare and declining plant species.

Within the same general area that the Canby's Mountain-lover was discovered, Virginia has designated a conservation interest area known as the Panther Conservation Site (VDCR 2006) (Figure 3.8). According to the state, conservation sites represent key areas of the landscape that warrant further review for possible conservation action due to the natural resources and habitat that they support. The Panther Conservation Site contains unique montane dry calcareous forest/woodland and is considered to be of "high biodiversity significance" (VDCR 2006).

■ Exotic and Invasive Species

The park contains a number of exotic and invasive species. The invasion into natural landscapes by exotic and invasive plant species is one of the most serious threats that parks face today. Exotic and invasive species are usually non-native plant species that disrupt complex native ecological communities, jeopardize endangered native plants and animals, degrade native habitats, and reduce plant diversity. Hybridization with exotics can also alter the genetic integrity of native species. Exotic and invasive species that could be found within the park include tree of heaven (*Ailanthus altissima*), autumn olive (*Elaeagnus umbellata*), garlic mustard (*Alliaria petiolata*), Japanese honeysuckle (*Lonicera japonica*), Japanese stilt grass (*Microstegium vimineum*), Japanese knotweed (*Polygonum cuspidatum*), mile-a-minute (*Polygonum perfoliatum*), kudzu vine (*Pueraria Montana*), multiflora rose (*Rosa multiflora*), and Johnson-grass (*Sorghum halepense*). Some exotic and invasive plant species may be important elements of a cultural landscape. No formal inventory or mapping of exotic plant species in the park has been conducted. To date, no exotic and invasive plant control has been performed by the NPS in the park.

3.3.13 Wildlife

A variety of wildlife species occupy the park's diverse habitats. The habitat available to wildlife within the park consists of forest, patchy woodlands, agricultural areas, and riparian corridors. This habitat benefits species that prefer edge and early successional habitat. Wetland areas scattered throughout the park provide habitat for waterfowl and other birds. Streams and rivers in and around the park "are of particularly high ecological value" and contain significant biological diversity (VDGIF 2006, VDCR 2006).

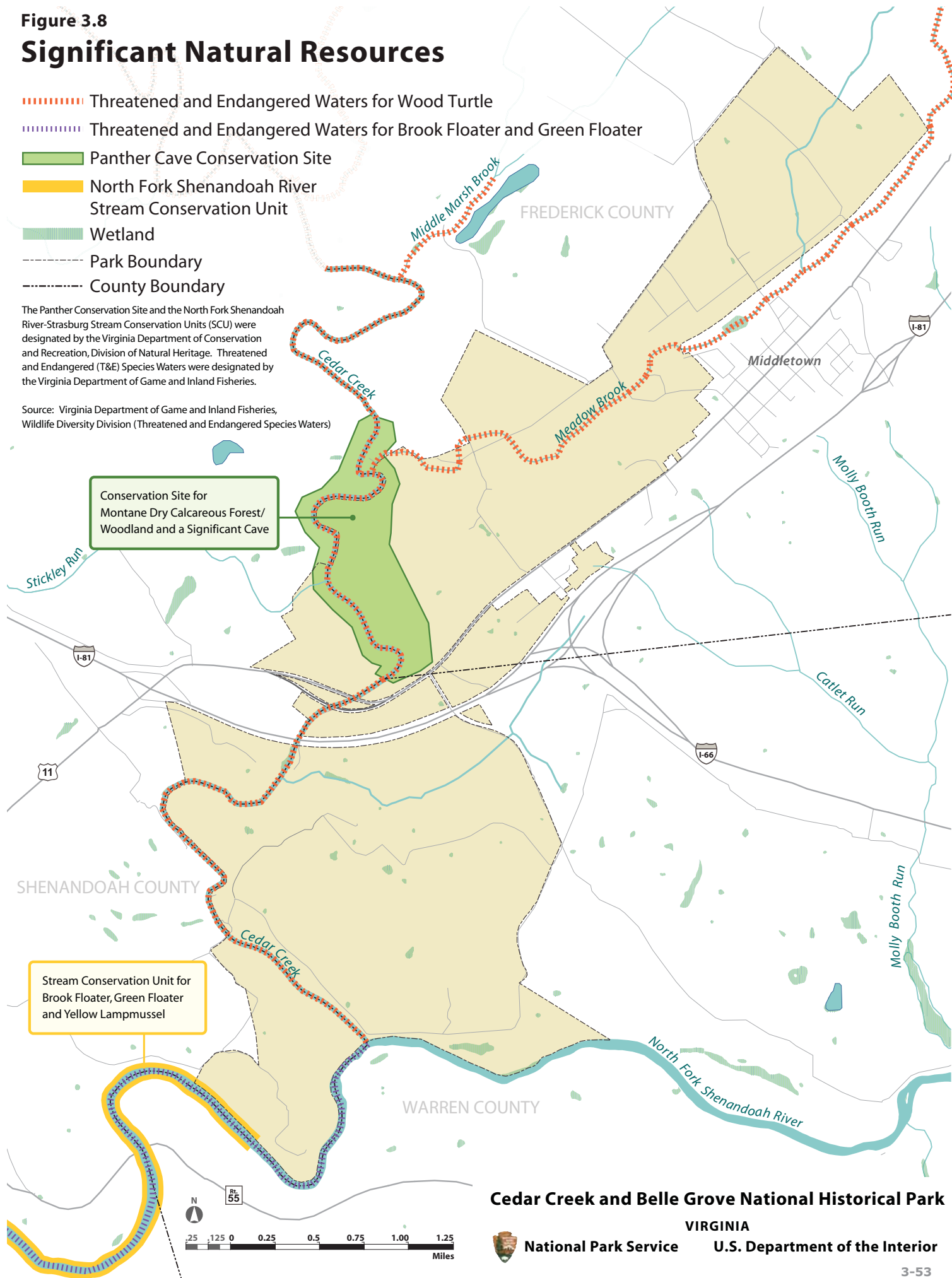
Figure 3.8

Significant Natural Resources

- ⋯⋯⋯ Threatened and Endangered Waters for Wood Turtle
- ⋯⋯⋯ Threatened and Endangered Waters for Brook Floater and Green Floater
- Panther Cave Conservation Site
- North Fork Shenandoah River Stream Conservation Unit
- Wetland
- Park Boundary
- County Boundary

The Panther Conservation Site and the North Fork Shenandoah River-Strasburg Stream Conservation Units (SCU) were designated by the Virginia Department of Conservation and Recreation, Division of Natural Heritage. Threatened and Endangered (T&E) Species Waters were designated by the Virginia Department of Game and Inland Fisheries.

Source: Virginia Department of Game and Inland Fisheries, Wildlife Diversity Division (Threatened and Endangered Species Waters)



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Habitat loss and fragmentation in the region has caused displacement of wildlife; however, most of the common species are generalists and have adapted. Actions and activities outside of the park have probably affected wildlife more than NPS or partner uses. In many cases, lands within the park boundary have acted as a refuge for wildlife.

Wildlife using the park includes ungulates and other mammals, birds, reptiles, amphibians, and invertebrates. The most common species are white-tailed deer, rabbits, gray squirrels, chipmunks, bobcats, gray foxes, skunks, and raccoons, as well as numerous song birds, passerines, and raptors (Heritage Partners, Inc. 2000). Amphibians, reptiles, and numerous species of fish occur in forests, floodplains, rivers, and streams in the park.

The park's location in the Atlantic flyway makes it conducive to providing resting areas for migratory birds. It is possible that wetlands in the park could be utilized by migratory waterfowl such as the northern pintail (*Anas acuta*) and tundra swan (*Cygnus columbianus*) (VGDIF 2004). The North Fork of the Shenandoah River, Cedar Creek, and other smaller waterways provide another type of habitat for species that require aquatic resources.

Hunting of game species, including white-tailed deer, wild turkey, squirrels, rabbits, and other species, occurs on private lands within the park. Hunting is regulated by the Virginia Department of Game and Inland Fisheries (VGDIF). Hunting on NPS-owned land within the park is prohibited. Harvest levels are not believed to have adversely affected the park's wildlife populations. The deer and wild turkey populations are believed to be robust (Stubbs 2006).

Exotic wildlife species, such as the European starling (*Sturnus vulgaris*), are present in the park and can affect native species and their habitats. Domestic pets and human-tolerant predators such as the striped skunk, raccoon, coyote, and red fox, are presumed to be present in the park as well. Domestic pets can pose a threat to wildlife. Human-tolerant species may present conflicts with humans and can proliferate with increasing development resulting in a decline in less tolerant species.

Overall, the effects of continued land fragmentation due to increased development and the expansion of transportation corridors in the area will likely have the most profound impact on wildlife in the area.

3.3.14 Fisheries and Aquatic Life

The park contains several perennial streams that contain a variety of native and non-native fish. Fisheries in the waters of the park are comprised mostly of warm water species. Common species in Meadow Brook include the longnose dace (*Rhinichthys cataractae*), a chub species (*Nocomis* sp.), green sunfish (*Lepomis cyanellus*), and rock bass (*Ambloplites rupestris*) (Bousquet 2004). The reach of

Meadow Brook contained in the park is designated by the state as a Class V “Stockable Trout Water,” which means that it could support stocked trout species (brook, brown, and rainbow trout) (Martin 2007). According to the state, Meadow Brook has not historically been stocked and there are currently no plans to initiate future fish stocking in this area (Martin 2007). Common species in Cedar Creek include Potomac sculpins (*Cottus girardi*), central stonerollers (*Camptostoma anomalum*), red-breasted sunfish (*Lepomis auritus*), and rock bass (*Ambloplites rupestris*) (Bousquet 2004). Recreational fishing in the park is regulated by the Virginia Department of Game and Inland Fisheries.

Several species of mussels reside in the watershed of the North Fork of the Shenandoah; however, their population and distribution are not well understood. The Virginia Natural Heritage Program is planning to conduct an invertebrate survey of the watershed in summer 2007 (Watson 2006). The waters of Cedar Creek and the North Fork of the Shenandoah River provide habitat for a number of sensitive invertebrates, including two mussels: the brook floater (*Alasmidonta varicosa*) and green floater (*Lasmigona subviridis*). The state has designated a portion of the North Fork of the Shenandoah River near Strasburg as a “Stream Conservation Unit” (SCU) because it contains three sensitive mussels: the brook floater, yellow lampmussel, and green floater (VDCR 2006) (Figure 3.8). This SCU has been assigned a ranking of “general biodiversity significance.” Mussels are sensitive to changes in water quality and are often used as indicators of water quality. Maintaining riparian buffers and implementing erosion and sediment control practices are two of the best things that can be done to preserve water quality for these species (Watson 2006).

The Price’s Cave isopod (*Caecidotea priceii*) is a rare subterranean aquatic species that may also occur in the park (VDCR 2006).

3.3.15 Federally Listed Threatened and Endangered Species

Informal consultation on the effect that proposed actions in this plan would have on federally listed threatened and endangered species was conducted with the Virginia Field Office of the U.S. Fish and Wildlife Service (USFWS) pursuant to Sec. 7 of the Endangered Species Act. A letter from the USFWS dated December 20, 2006 stated that “no federally listed species are known to occur in the project area.” Data provided by the Virginia Department of Conservation and Recreation, Division of Natural Heritage also do not identify any known current or historical occurrences of any federally listed plant or animal species in the park.

■ Federally Listed Plants

Although there are no federally listed plants known to be present in the park, the three-county area where the park is located is home to several federally listed species (Table 3.1). No formal botanical surveys have been performed in the park

Table 3.1 Potential Listed Plant Species for Cedar Creek and Belle Grove NHP¹

| Common Name | Scientific Name | Designated Status ² | |
|-------------------------|--------------------------------|--------------------------------|-------|
| | | Federal | State |
| Canby's Mountain-lover | <i>Paxistima canbyi</i> | SC | |
| Harperella | <i>Ptilimnium nodosum</i> | E | |
| Northeast bulrush | <i>Scirpus ancistrochaetus</i> | E | |
| Shale barren rock cress | <i>Arabis serotina</i> | E | |

¹ This table includes all listed species for Warren, Frederick, and Shenandoah Counties. It does not necessarily mean that they are present in the park.

² **E** = endangered **T** = threatened **SC** = species of concern (federal); species of special concern (state) [no regulatory authority]

Sources: USFWS 2005; Virginia Field Office 2005; Virginia Department of Conservation and Recreation, Natural Heritage Program 2006

by the NPS or the Key Partners. Three endangered species [shale barren rock cress (*Arabis serotina*), northeastern bulrush (*Scirpus ancistrochaetus*), harperella (*Ptilimnium nodosum*)] are listed for Warren, Frederick, and Shenandoah counties. A brief description of each of these federally listed plants is provided below.

Shale barren rock cress occurs only in West Virginia and Virginia and grows on shale barrens, often above incised streams, of the Valley and Ridge Province of the mid-Appalachian Mountains. Threats to this species include destruction of habitat by road construction or by human activities; foraging by deer and insects, especially during dry conditions; and drought (USFWS 2002).

Northeastern bulrush is found in old mountain ponds. Threats include habitat loss and degradation caused by wetland drainage, dredging, and filling for residential development and agricultural use. Any modifications which reduce the water level or dry out a pond could eliminate all or most of the individuals in a population (USFWS 1999).

Harperella typically occurs in rocky or gravel shoals and margins of clear, swift-flowing stream sections. This plant tolerates and may actually require a very specific and unusual water regime, which includes moderately intense spring floods that reduce or eliminate competing vegetation. Threats include alterations of the water regime which result from impoundments, water withdrawal, and drainage or deepening of ponds (USFWS 1992). Other factors such as siltation, pollution, and shoreline development also threaten harperella populations. The Virginia Field Office of the USFWS lists this species as endangered; however, the Washington, D.C. office identifies the species as being federally listed, but not occurring in Virginia.

■ Federally Listed Animals

Although there are no federally listed animals known to be present in the park, the three-county area where the park is located is home to a number of federally listed

species (Table 3.2). No formal wildlife surveys have been performed in the park by the NPS or the Key Partners. One endangered species [Indiana bat (*Myotis sodalis*)] and one threatened species [Madison Cave isopod (*Antrolana lira*)] are listed for Warren, Frederick, and Shenandoah counties. According to discussions with VDGIF biologists, neither of these species is likely to be present in the park (Reynolds 2006, Watson 2006). A brief description of each federally listed animal is provided below.

The Indiana bat is found in the western portion of Virginia during hibernation, but is seldom found in the state during summer. They hibernate from mid-October through April in large caves and abandoned mines that have stable, cold temperatures during the winter. These bats are sensitive to human disturbance; they are easily disturbed by activities such as vandalism, caving, and research during the hibernating months (USFWS 2000). Other threats are flooding of caves, blockage of cave entrances, and pesticide poisoning.

The Madison cave isopod inhabits flooded limestone caves beneath the Great Valley of Virginia. It spends much of its time swimming freely through calcite-saturated waters of deep karst aquifers (USFWS 2005). The species is sensitive to impacts from changes in water quality.

3.3.16 State Listed Threatened and Endangered Species

Scoping was conducted in 2006 with the several commonwealth of Virginia agencies that are responsible for environmental review and coordination with federal land management agencies, including the Department of Conservation and Recreation (VDCR) and the Department of Game and Inland Fisheries (VDGIF).

■ State Listed Plants

According to the letters and GIS data provided by the state, there are no known current or historical occurrences of any state threatened or endangered plants in the park (VDCR 2006, VDGIF 2006). No formal botanical surveys have been performed in the park by the NPS or the Key Partners.

■ State Listed Animals

State listed animals known to be present in the park include the brook floater, green floater, and wood turtle. The green floater and wood turtle are listed as state threatened, while the brook floater is listed as state endangered. The state has designated the North Fork of the Shenandoah River, Meadow Brook, Middle Marsh Brook, Buffalo Marsh Run, and Cedar Creek as "Threatened and Endangered Species Waters" due to the presence of the brook floater (*Alasmidonta varicosa*), green floater (*Lasmigona subviridis*), or wood turtle (*Glyptemys insculpta*) (VDGIF 2006, Martin 2007) (Figure 3.8).

Table 3.2 Potential Listed Wildlife Species for Cedar Creek and Belle Grove NHP¹

| | | Designated Status ² | |
|------------------------------|---------------------------------------|--------------------------------|-------|
| Common Name | Scientific Name | Federal | State |
| Mammals | | | |
| Indiana bat | <i>Myotis sodalis</i> | E | E |
| Northern river otter | <i>Lontra Canadensis lataxina</i> | | SC |
| Birds | | | |
| Alder flycatcher | <i>Empidonax alnorum</i> | | SC |
| Bald eagle | <i>Haliaeetus leucocephaus</i> | | T |
| Barn owl | <i>Tyto alba pratincola</i> | | SC |
| Bewick’s wren | <i>Thryomanes bewickii</i> | | E |
| Brown creeper | <i>Certhia americana</i> | | SC |
| Common moorhen | <i>Gallinula chloropus cachinnans</i> | | SC |
| Dickcissel | <i>Spiza americana</i> | | SC |
| Golden-crowned kinglet | <i>Regulus satrapa</i> | | SC |
| Golden-winged warbler | <i>Vermivora chrysoptera</i> | | SC |
| Hermit thrush | <i>Catharus guttatus</i> | | SC |
| Loggerhead shrike | <i>Lanius ludovicianus</i> | | T |
| Magnolia warbler | <i>Dendroica magnolia</i> | | SC |
| Migrant loggerhead shrike | <i>Lanius ludovicianus migrans</i> | | T |
| Northern harrier | <i>Circus cyaneus</i> | | SC |
| Peregrine falcon | <i>Falco peregrinus</i> | | T |
| Purple finch | <i>Carpodacus purpureus</i> | | SC |
| Red-breasted nuthatch | <i>Sitta canadensis</i> | | SC |
| Upland sandpiper | <i>Bartramia longicauda</i> | | T |
| Winter wren | <i>Troglodytes troglodytes</i> | | SC |
| Amphibians | | | |
| Cow knob salamander | <i>Plethodon punctatus</i> | | SC |
| Reptiles | | | |
| Wood turtle | <i>Glyptemys insculpta</i> | | T |
| Invertebrates | | | |
| A cave amphipod | <i>Stygobromus</i> sp. 9 | SC | |
| A cave pseudoscorpion | <i>Mundochthonius holsingeri</i> | SC | |
| A millipede | <i>Striaria columbiana</i> | SC | |
| Appalachian grizzled skipper | <i>Pyrgus wyandot</i> | SC | T |
| Appalachian springsnail | <i>Fontigens bottimeri</i> | | E |
| Barrens tiger beetle | <i>Cicindella patruela</i> | SC | |
| Bigger’s cave amphipod | <i>Stygobromus biggersi</i> | SC | |
| Brook floater | <i>Alasmidonta varicosa</i> | | E |
| Green floater | <i>Lasmigona subviridis</i> | | T |
| Madison cave isopod | <i>Antrolana lira</i> | T | T |
| Mud-dwelling cave beetle | <i>Pseudoanophthalmus limicola</i> | SC | |

Table 3.2 Potential Listed Wildlife Species for Cedar Creek and Belle Grove NHP¹ (continued)

| | | Designated Status ² | |
|---------------------------------|--|--------------------------------|-------|
| Common Name | Scientific Name | Federal | State |
| Invertebrates (continued) | | | |
| Petrunkevitch's cave beetle | <i>Pseudoanoptalmus petrunkevitchi</i> | SC | |
| Shenandoah Valley Cave Amphipod | <i>Stygobromus gracilipes</i> | | SC |
| Tennessee pigtoe | <i>Fusconaia barnesiana</i> | SC | |
| Thin-neck cave beetle | <i>Pseudoanophthalmus parvicollis</i> | SC | |
| Yellow lampmussel | <i>Lampsilis cariosa</i> | | SC |

¹ This table includes all listed species for Warren, Frederick, and Shenandoah Counties. It does not necessarily mean that they are present in the park.

² **E** = endangered **T** = threatened
SC = species of concern (federal); species of special concern (state) [no regulatory authority]
 * = proposed for listing under the Virginia Endangered Plants and Insect Act

Sources: USFWS 2005; Virginia Field Office 2005; Virginia Department of Conservation and Recreation, Natural Heritage Program 2006; Virginia Department of Game and Inland Fisheries – Wildlife Information Service, Biota of Virginia (BOVA) database 2006

Other state listed animals that are known to occur in the three-county area, but have not been documented in the park, include five threatened species and two endangered species. The threatened species are the peregrine falcon (*Falco peregrinus*), upland sandpiper (*Bartramia longicauda*), loggerhead shrike (*Lanius ludovicianus*), migrant loggerhead shrike (*Lanius ludovicianus migrans*), and Appalachian grizzled skipper (*Pyrgus wyandot*). The two endangered species are the Bewick's wren (*Thryomanes bewickii*), Appalachian springsnail (*Fontigens bottimeri*). No formal wildlife surveys have been performed in the park by the NPS or the Key Partners.

A brief description of those state listed animals that are present in the park (or documented just outside of the park boundary) is provided below.

The brook floater and green floater, both mussels, reside in the watershed of the North Fork of the Shenandoah River. They are known to occur in the North Fork of the Shenandoah River within the park boundary. Mussels are sensitive to changes in water quality and are often used as indicators of water quality. Maintaining riparian buffers and implementing erosion and sediment control practices are two of the best things that can be done to preserve water quality for these species (Watson 2006).

The wood turtle is known to reside in the North Fork of the Shenandoah River watershed. Within the park, sections of Cedar Creek, Meadow Brook, Middle Marsh Brook, and Buffalo Marsh Run have been designated by the state as "Threatened and Endangered Species Waters" for the wood turtle (VDCR 2006) (Figure 3.8). Data provided by the Virginia Department of Conservation and Recreation, Division of Natural Heritage identify at least one relatively recent occurrence of the wood

turtle in the park. Wood turtles are medium-sized and can be recognized by their sculpted shell with its distinctive pyramidal shapes and orange coloration on the legs and neck. They are semi-aquatic, living along forested rivers and streams. They utilize upland areas adjacent to streams during warmer weather for foraging and nesting (VDGIF 2006). They are active by day from April to November and hibernate over winter inside stream banks in large community burrows (Wisconsin DNR 2006). Threats to the wood turtle include impacts to water quality, stream bank erosion, development within riparian areas, and illegal collection (Kleopfer 2006).

The Appalachian springsnail was recently discovered just outside of the park boundary about a mile north of the park at Ogden's Cave. This species was listed by the state as endangered on July 1, 2006 (Orndorff 2006). Very little is known about the species, other than it is endemic to the area. State karst biologists believe that the geologic and hydrologic conditions of the Ogden's Cave site are similar to what is found in the park; however, there are no cave openings in the park where these similar resources occur. Threats to the species include habitat destruction and water quality impacts.

Potentially suitable habitat for other state listed species may exist in the park. These areas include thickets, scrubby areas, open woodlands and farmlands, and streams that may be used by the Bewick's wren; open fields, pastures, and early successional grasslands that could provide habitat for the upland sandpiper and loggerhead shrike; and shale barrens and early successional habitat that could provide habitat for the Appalachian grizzled skipper.

3.4 Visitor Use and Experience

The park is enmeshed within the local community and there is no single entrance or tour route that visitors follow. Some visitors may stop at the Belle Grove Plantation, Cedar Creek Battlefield Foundation Headquarters, or the Cedar Creek and Belle Grove NHP office where they can interact with staff of the park or its partner site. Others may travel the back roads of the park to view Signal Knob, Bowman's Mill Ford, and Middletown Cemetery or drive through on one of the driving routes, and have no interaction with staff from the park or the Key Partners. The primary source of visitor contact and interpretation is Belle Grove Plantation and the foundation's headquarters facility.

3.4.1 Types of Visitors

The park has a diverse group of visitor types, with varying interests and knowledge of local history, which reflect different ways of experiencing the park. The following visitor types were identified in the *Cedar Creek and Belle Grove NHP Transportation Synthesis*, May 2006.

■ **Civil War Enthusiast**

Visitors who are interested in Civil War history will likely have a basic understanding of the Civil War and may be combining a trip to the park with other nearby battlefield sites. Civil War enthusiasts are most likely to visit sites that provide passive interpretation of the civil war battlefield landscape. Exhibits, reenactments and other active interpretation are of interest to these visitors. Hiking or other recreational activities are probably of less interest unless they provide a greater understanding of how and where the battle occurred. This group includes those participating in and attending reenactments.

■ **Visitors with Other Historic Interests**

This visitor type has specific interests in American settlement patterns, the antebellum period or historic architecture. Belle Grove Plantation, Harmony Hall, the Bowman-Long Meadow area, and nearby sites outside of the park boundary are likely attractions. These visitors are somewhat knowledgeable about their specific interest, but may not know about other aspects of the park's history. In addition to a historical overview of the park, access to buildings and interpretation of landscapes will likely be the focus for this group of visitors.

■ **National Park/National Historic Trust Property "Baggers"**

Some visitors may be drawn to the park because of its status as a national park, or to Belle Grove Plantation as a National Trust site. These visitors are often referred to as park 'baggers' and may have little background knowledge of the area. They are keenly interested in learning more and are usually receptive to a diverse set of experiences, including recreational activities, walking and driving through the landscape, touring buildings and other types of active interpretation. 'Baggers' generally represent a modest percentage of total visitation. For example, only 6 percent of visitors at Belle Grove Plantation are members of either the National Trust for Historic Preservation or Belle Grove Plantation.

■ **Recreationalists**

The park encompasses a diverse landscape with numerous opportunities for recreational activities and enjoyment of its natural resources for both locals and a wider audience. This visitor type may be drawn to the park for a wide variety of recreational uses but typically there is little overlapping among activities. Currently, recreationalists are considered to be largely local, as recreational use in the park is generally informal and dependent on local knowledge of site access.

■ **Visitors on Educational Tours**

Belle Grove Plantation currently attracts approximately 50 school groups and adult bus tours annually. Educational tours are likely to be focused on active interpretation and visitors unable to tour the entire park. Places visited need to be relatively close to parking, with access roads and parking areas able to

accommodate larger tour vehicles. Open space for picnicking and space to play is of interest to school groups. College-level groups may have interest in archaeological and geologic research at the park.

■ **“Curious”**

“Curious” visitors do not necessarily plan for their visit to the park. They may notice a highway sign, find material about the park in their hotel room, a visitor center, or another local site of interest; they may be staying locally or on a multi-day drive. Regardless of the reason for their visit, they are likely to know little about the park or local history and will appreciate easily accessible information. The initial park experience is very important for this group. Some curious visitors have very little time to visit the park; others with more time may be able to fully explore the park if their interest is stimulated by their initial experience.

3.4.2 Park Partner Visitation and Facilities

While most of the sites within the park are not currently staffed, there is information on visitation patterns from Belle Grove Plantation and the Cedar Creek Battlefield Foundation. With approximately 25,000 visits to the park counted by park partners, it is reasonable to estimate that approximately 35,000 to 50,000 people visit the park annually.

■ **Cedar Creek and Belle Grove NHP**

Since 2004, the NPS has had an administrative office in a small strip of stores and offices on Route 11 in the town of Middletown. The NPS does not provide formal visitor services at this time, but the two-person staff provides visitor contact information. In 2006, about 350 mail or phone inquiries were received and 250 drop-in visitors recorded.

■ **Belle Grove Plantation**

Belle Grove Plantation is open daily from April through October and on weekends in November and December for special events. Almost 10,000 visitors were reported in 2005, down slightly from a high of 13,000 visitors in 2004. During the April-October period, approximately 4,000 visitors came independently, primarily for tours of the house, and 1,600 came as a part of a larger adult or student tour group. Over 4,000 came to participate in special events, including private rentals. Belle Grove’s Museum Shop, in the main house, reported gross sales of \$42,113 in 2006.

Belle Grove, Inc. owns Harmony Hall, and recently took full responsibility for management of the site from the life estate tenant. Harmony Hall will soon be open for public tours on a limited basis.

Special Events. The larger special events at Belle Grove are the annual “Of Ale and History” Microbrew and Imported Beer Tasting Festival, which drew 3,000 in

May 2005; the Bluegrass Festival, drawing 500 in July 2005. The site hosts the Triennial Hite Family Reunion, which drew 270 visitors in July 2005. Other annual events include the Annual Easter Egg Hunt & Family Fun Day, 18th Century Encampment, Living History Camp for Kids, Ice Cream Social, Antiques Appraisal Fair, and Living History Days.

■ **Cedar Creek Battlefield Foundation**

The Cedar Creek Battlefield Headquarters, operated by the Cedar Creek Battlefield Foundation, is located on Route 11. It is open daily for much of the year. There are interpretive displays, restrooms, and a retail operation that carries mainly books and pamphlets. The book shop reported total sales of \$45,171 in 2006.

The Heater House, within the section of the Cedar Creek Battlefield owned by the foundation, is not open to the public. The foundation maintains the 135-acre wooded area known as the Bayliss Tract, which contains some of the few earthworks constructed during the war that are still in good condition. There is a half-mile walking trail with interpretive signs. The tract also provides more than a mile of frontage on Cedar Creek's northern bank and access to Panther Cave. No information is available on the number of users of the walking trail, as most groups do not check in with the foundation when visiting the Bayliss Tract. Student groups reportedly conduct archaeological research and caving within the park. Access to the tract is gained by a narrow road off Route 11. There is no signage identifying the site, which limits current use.

Special Events. The CCBF organizes an annual reenactment of the Battle of Cedar Creek, regularly held on the third weekend in October, which typically attracts approximately 12,000 people for the two-day event. An estimated 5,000 registered reenactors and 7,000 spectators attended in 2006. CCBF also hosted in 2006 a reenactment of the Battle of First Manassas in commemoration of its 145th anniversary, an event attended by 7,000 registered reenactors and 10,000 spectators. CCBF has scheduled the reenactment of Jackson's 1862 "Down the Valley" Campaign in 2007, in addition to the annual Battle of Cedar Creek reenactment.

The reenactments are held on battlefield lands off U.S. Hwy 11 owned by CCBF and the National Trust. The battlefield is also the location for reenactors camps; temporary facilities for merchants, food vendors, and emergency services; and portable toilets, garbage dumpsters, and information booths. Parking space for thousands of spectators is provided on the battlefield and spectators move around the battlefield freely to view the reenactments and use facilities. Ancillary off-site parking for both re-enactors and spectators is available, and buses provide shuttle service on a loop route between the battlefield and the parking areas.

Foundation staff work closely with the town of Middletown to orchestrate the event and the sheriff receives assistance from Frederick County to monitor and direct traffic. There can be periods of heavy congestion over the reenactment weekend when traffic backs up through Middletown.

Middletown and Frederick County officials see the reenactments as a major economic boon, providing name recognition for the area, significant tax dollars, and substantial gross receipts for local merchants.

■ **Shenandoah Valley Battlefields Foundation**

The Shenandoah Valley Battlefields Foundation is dependent on collaboration among the Key Partners to achieve its goals in the Shenandoah Valley Battlefields National Historic District and does not operate visitor facilities. It has developed an interpretive plan to facilitate coordination of individual site interpretation in the district. Concurrently, a marketing plan for the district was prepared for the foundation by the Heritage Tourism Program of the National Trust for Historic Preservation. The two plans provide a framework for implementing coordinated interpretation and over time, a high quality visitor experience in the district.

The initial phase of the interpretive plan proposes a physical structure for the interpretive presentation of the Shenandoah Valley that would be established through four elements: historic driving routes based on three primary north-south highways, including Route 11 (the Valley Turnpike), and a series of east-west connections; major regional attractions with visitor facilities that are open full time, involved in marketing and programming, able to draw visitors to the Valley, and provide visitor experiences that are of national quality; battlefields; and valley towns and landscapes. The proposed valley-wide themes of the broad history of the valley, Civil War battles, and the civilian experience during the Civil War would be applied across all four elements.

The park has been identified as a key component in the proposed structure due to its location on the Valley Turnpike, battlefield resources, the presence of regional attractions, scenic landscapes, and adjacency to the towns of Middletown and Strasburg.

■ **Shenandoah County**

The Keister Tract is undeveloped and not open for visitor use. Subsequently, there are no records on visitor activities. The 2005 Master Plan for the 151-acre site proposes an interpretive center and comfort stations, walking and equestrian trails, tent camping, access to the North Fork of the Shenandoah River, an outdoor classroom and amphitheater, and an adventure course, as well as connections to regional trail systems. Once improvements are fully in place, annual visitation is projected to be between 50,000 to 100,000.

3.4.3 Other Visitor Use

■ Driving Tours

The Battle of Belle Grove or Cedar Creek. The driving tour covers 12 locations on routes within and in the vicinity of the park and entails about 20 miles of driving. Presented in the "Self Guided Tour: The Battle of Belle Grove or Cedar Creek" pamphlet, the tour was developed in conjunction with the CCBF foundation by Dr. Joseph Whitehorne, history professor at Lord Fairfax Community College. There is no signage identifying the tour route.

Valley Campaign of 1864 (Virginia Civil War Trails). The Virginia Tourism Corporation's Virginia Civil War Trails program establishes interpreted driving routes featuring campaigns of the Civil War and other themes throughout the state. Wayside exhibits are installed at the sites where interpreted events occurred, and wayfinding signage helps travelers navigate from site to site along the identified routes or trails. The Valley Campaigns of 1864 driving route, which links sites between Fort Collier in Winchester and the Frontier Culture Museum in Staunton, goes through the park on Route 11. There are three sites with wayside exhibits: the Cedar Creek Battlefield Foundation Headquarters, Belle Grove, and Valley Turnpike at Cedar Creek. The Valley Campaign of 1864 is one of three thematic trails in the "Shenandoah Valley Avenue of Invasion" presentation of the Civil War Trails program.

Apple Trail Driving Tour. The Frederick County Convention and Visitors Bureau in Winchester has developed the "Apple Trail," a 45-mile self-guided driving tour that takes visitors to scenic and historic sites throughout the area, including the park.

■ Civil War Monuments and Interpretive Waysides

Visitors may stop at roadside interpretive signs and the three monuments within the park as part of a driving route; other stops may be spurred by the sight of a state historic site marker or wayside along Route 11; or result from a planned visit to one of the monuments. The New York Monument is a short distance off Route 11 near the intersection of County Route 840, which leads to the Bayliss Tract. The monument and parking space for three to four cars are within the VDOT right-of-way. The Ramseuer Monument faces Route 11 at County Route 727 (Belle Grove Road). The intersection is narrow and heavily traveled, and the site has inadequate space for parking; cars tend to pull over along the highway at points north or south of the monument. The Vermont Monument is on privately owned land and is not readily accessible.

■ Camping, Hunting, and Fishing

The privately owned Battle of Cedar Creek Campground is the single camping facility in the park. There is some recreational fishing, regulated by the Virginia Department of Game and Inland Fisheries, in the park. Hunting of game species,

including white-tailed deer, wild turkey, squirrels, and rabbits occurs on private lands within the park.

■ **Regional Bike Network**

The Northern Shenandoah Valley Regional Commission adopted a report entitled “Walking and Wheeling the Northern Shenandoah” in 2004. Prepared with the support of the Shenandoah Valley Battlefields Foundation, the report identified a regional bike network and assessed biking conditions on existing roads. The network includes several routes to and through the park. The number of bicyclists using the network is not known, but organized biking groups in the Winchester area do make use of the network through the park.

3.4.4 Regional Sites and Attractions

■ **Civil War Sites**

Cedar Creek and other Civil War battlefields in the Shenandoah Valley are part of the Shenandoah Valley Battlefield National Historic District. Cedar Creek has been clustered with Fisher’s Hill and Tom’s Brook battlefields within the management framework of the district. Currently, the only connectivity between the battlefields is the Virginia Civil War Trails driving route and signs.

■ **George Washington National Forest**

The national forest is 1,064,562 acres managed by the U.S. Forest Service, part of the Department of Agriculture. It is close to the southern boundary of the park, across the North Fork of the Shenandoah River and U.S. Highway 55. Signal Knob, the high point at the northern end of the Massanutten Range, is a defining feature of the forest and visible from many areas within the park. Sweeping views of the Shenandoah Valley and a broad perspective of troop movements during the battle can be gained from the summit of Signal Knob. Adjacent to the trailhead that leads to it is the Elizabeth Furnace area, which contains individual and group campgrounds, hiking and equestrian trails, and the remains of an old iron furnace.

■ **Shenandoah National Park**

Within Shenandoah NP is Skyline Drive, the area’s most scenic roadway, which winds along the crest of the Blue Ridge Mountains. The drive offers vantage points of areas within Cedar Creek and Belle Grove NHP, and provides an overlook for Signal Knob. Also within the park is the Appalachian Trail, hiking trails, and wildlife viewing areas. Cedar Creek and Belle Grove NHP is accessible from the northern end of Skyline Drive.

■ **Trails**

The major cross-region trails in the vicinity of the park are the Appalachian Trail, within Shenandoah NP, and the Tuscarora Trail, within the national forest. The trails

connect in Shenandoah NP. A hiking trail between the Keister Tract and Signal Knob has been proposed. It would connect to the loop trail that leads to the top of Signal Knob from the loop trail to the Tuscarora Trail, providing linkage between the park and the regional trail system.

3.5 Socioeconomic Environment

As noted earlier, this chapter includes information on the various elements of the socioeconomic environment relating to the park for the purpose of compiling this information for this first GMP. However, not all of the socioeconomic environment described here will be analyzed in the EIS portion of this document. The following elements may potentially be affected by the GMP alternatives: Economic Impact of the Park - Local and Regional Economy. The information presented here for these topics serves as the description of the Affected Environment in accordance with the requirements of NEPA. All other topics and information included in this section are presented as background but have been dismissed from further analysis in the EIS.

3.5.1 Population

Throughout its history the three-county region has been predominantly rural in nature, with mostly farms and forests and a few towns scattered along the valley. The combined population of Frederick, Shenandoah, and Warren counties, and the City of Winchester was about 125,400 in 1990 (Table 3.3). This was about 2 percent of Virginia's total population at the time. During the last decade the region's population grew by more than 24,000 people, a 19 percent increase (Table 3.4). The region is still mostly rural, although development in the region is increasing. The 2000 regional population of nearly 149,500 was about 2.1 percent of the state's total.

All three counties and Winchester experienced an increase in population during the last decade. Frederick County had the largest numerical growth gaining about 13,500 new residents or nearly 30 percent. Its growth rate was twice that of the state as a whole. Shenandoah County's growth is less than that of the state; the county saw an 11 percent increase at an annual growth rate of nearly 1 percent. Warren County gained more than 5,400 new residents, a more than 20 percent increase. Winchester is the largest city in the three-county region. Winchester's 2000 population was about 23,600, an increase of 7.5 percent since 1990.

Population growth in different parts of the region has been varied. Middletown, the town closest to the park, had a slight decline in population in the 1990's (declining by 46 people or -4.6%), while Strasburg grew by less than 7 percent, only one-half the growth experienced by Virginia as whole.

Table 3.3 Population of the Park Region

| Area | 1990 | % of State Population | 2000 | % of State Population | 2005 | % of State Population |
|-------------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Winchester ¹ | 21,947 | 0.4% | 23,585 | 0.3% | 25,119 | 0.3% |
| Frederick County | 45,723 | 0.7% | 59,209 | 0.8% | 69,123 | 0.9% |
| Shenandoah County | 31,636 | 0.5% | 35,075 | 0.5% | 39,184 | 0.5% |
| Warren County | 26,142 | 0.4% | 31,584 | 0.4% | 35,556 | 0.5% |
| Virginia | 6,187,358 | 100% | 7,078,515 | 100% | 7,567,465 | 100% |
| USA | 248,709,873 | | 281,421,906 | | 299,398,484 | |

¹ Winchester is an independent city in Virginia and census data are collected and reported separately from Frederick County.

Source: U.S.D.C., U.S. Census Bureau 2000a, 1990a, 2006a and 2006b

Table 3.4 Population Growth of the Park Region

| Area | Annual Rate of Growth 1990 to 2000 | Total % Increase 1990 to 2000 | Total % Increase 2000 to 2005 |
|-------------------|---------------------------------------|----------------------------------|----------------------------------|
| Winchester | 0.7% | 7.5% | 6.5% |
| Frederick County | 2.4% | 29.5% | 16.7% |
| Shenandoah County | 0.9% | 10.9% | 11.7% |
| Warren County | 1.7% | 20.8% | 12.6% |
| Virginia | 1.2% | 14.4% | 6.9% |
| USA | 1.1% | 13.2% | 6.4% |

Source: U.S.D.C., U.S. Census Bureau 2000a, 1990a, 2006a and 2006b

From 2000 to 2005 populations continued to grow in the three counties and in Winchester. Winchester grew by more than 1,500 people, a 6.5 percent increase. Frederick County added more than 9,900 residents (16.7%), Shenandoah County increased by about 4,100 (11.7%), and Warren County's population expanded by nearly 4,000 (12.6%) (Table 3.3).

3.5.2 Race and Ethnicity

The racial and ethnic distribution of the three-county affected area (Frederick – including the City of Winchester, Shenandoah, and Warren counties), the state of Virginia, and the nation as a whole are displayed in Table 3.5. The percentages of population for seven racial groups (as determined by the U.S. Census Bureau) are shown. For the 2000 Census individuals were allowed to identify themselves as "Some other race" (not specified by the U.S. Census Bureau) or as belonging to "Two or more races." The total racial minority percentage figures are the sum of the other six non-white categories – Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, "Some other race," and "Two or more races." In addition, the Hispanic or Latino populations, a minority ethnic group, are displayed. These figures are not counted in the totals to

Table 3.5 Population, Race and Ethnicity, 2000

| Area | Frederick County | | Shenandoah County | | Warren County | | Virginia | | USA | |
|--|------------------|----------------|-------------------|----------------|---------------|----------------|------------------|----------------|--------------------|----------------|
| Race | Number | % ¹ | Number | % ¹ | Number | % ¹ | Number | % ¹ | Number | % ¹ |
| White | 56,240 | 95.0% | 33,533 | 96.5% | 29,280 | 92.7% | 5,120,110 | 72.3% | 211,460,626 | 75.1% |
| Black or African American | 1,550 | 2.6% | 412 | 1.2% | 1,526 | 4.8% | 1,390,293 | 19.6% | 34,658,190 | 12.3% |
| American Indian and Alaskan Native | 92 | 0.2% | 62 | 0.2% | 84 | 0.3% | 21,172 | 0.3% | 2,475,956 | 0.9% |
| Asian | 388 | 0.7% | 122 | 0.3% | 136 | 0.4% | 261,025 | 3.7% | 10,242,998 | 3.6% |
| Native Hawaiian and Other Pacific Islander | 10 | 0.02% | 6 | 0.02% | 7 | 0.02% | 3,946 | 0.1% | 398,835 | 0.1% |
| Some Other Race | 329 | 0.6% | 628 | 1.8% | 145 | 0.5% | 138,900 | 2.0% | 15,359,073 | 5.5% |
| Two or More Races | 600 | 1.0% | 312 | 0.9% | 406 | 1.3% | 143,069 | 2.0% | 6,826,228 | 2.4% |
| Total Population | 59,209 | 100% | 35,075 | 100% | 31,584 | 100% | 7,078,515 | 100% | 281,421,906 | 100% |
| Hispanic or Latino ² | 1,004 | 1.7% | 1,194 | 3.4% | 494 | 1.6% | 329,540 | 4.7% | 35,305,818 | 12.5% |

¹ Figures may not add to 100 percent due to rounding

² People of Hispanic or Latino ethnicity may be of any race. These figures are not counted in the totals to avoid duplicate counting.

Source: U.S.D.C., U.S. Census Bureau 2000a, 1990a, 2006a and 2006b

avoid duplicate counting since people of Hispanic or Latino ethnicity may be of any race.

Minorities made up about five percent of Frederick County's population, less than five percent of Shenandoah County's population, and about 7.3 percent of Warren County's population in 2000. In Frederick and Warren counties, the largest minority group was African Americans making up 2.6 percent and 4.8 percent, respectively, of the totals. Hispanic or Latino people, at 3.4 percent of the totals, were the largest minority group in Shenandoah County. White was by far the largest racial group in each of the three counties.

In Virginia, minorities made up 27.7 percent of the total population and African American or Black people comprised 19.6 percent of the total state population. Hispanic or Latino people made up 4.7 percent of Virginia's population. Nationally, racial minorities made up about one-fourth of the population and the ethnic minority Hispanic or Latino represented one-eighth of the total. The 2000 Census was the first time that Hispanics supplanted Black or African Americans as the largest minority group in the country.

3.5.3 Income

■ Per Capita Income

In both 1989 and 1999, Virginia's per capita personal income (PCPI) was actually higher than that of the national as a whole (Table 3.6). The PCPIs of the selected areas of the affected region were all lower than the national PCPI and some were much lower than the state PCPI. This is to be expected in a rural region with a relatively low population. A lower population results in lower demand for goods,

Table 3.6 Per Capita Personal Income (PCPI)

| Area | 1989 | % of 1989 State PCPI | 1999 | % of 1999 State PCPI | 2004 | % of 2004 State PCPI |
|-------------------|-----------------|-------------------------|---------------|-------------------------|--------------------------------|-------------------------|
| Winchester | \$14,214 | 90.5% | \$20,500 | 85.5% | Included with Frederick County | |
| Frederick County | \$13,671 | 87.0% | 21,080 | 87.9% | 30,686 | 84.9% |
| Shenandoah County | \$12,686 | 80.7% | 19,755 | 82.4% | 26,880 | 74.3% |
| Warren County | \$13,580 | 86.4% | 19,841 | 82.8% | 28,996 | 80.2% |
| Virginia | \$15,713 | 100.0% | 23,975 | 100.0% | 36,160 | 100.0% |
| USA | \$14,420 | 91.8% | 21,587 | 90.0% | 33,050 | 91.4% |

Source: U.S.D.C., U.S. Census Bureau 1990d and 2000b

services, and labor than occurs where higher populations are concentrated in smaller geographic areas. Frederick County was closest to the 1999 national PCPI of \$21,587 with a PCPI of \$21,080. Its position relative to the state PCPI was about a percentage point better than it was in 1989. The average PCPI for all the selected areas did increase; however some areas improved relative to the state PCPI while others lost ground. Shenandoah County also increased relative to Virginia, but Warren County's percent of the state PCPI decreased.

In 2004, Frederick County and the City of Winchester had a PCPI of \$30,686, which was 85 percent of the state PCPI of \$36,160 and 93 percent of the national PCPI of \$33,050. In the same year Shenandoah County's PCPI was \$26,880, only 74 percent of the state figure and 81 percent of the national figure. At \$28,996, Warren County's PCPI fell between the other two counties. This PCPI was 80 percent of the state and 88 percent of the national figure. The growth rates for the three counties were 4.4 percent for Frederick County and the City of Winchester, 3.8 percent for Shenandoah County, and 4.3 percent for Warren County. The state wide growth rate was 4.5 percent and the national rate was 4.1 percent.

■ Median Income

Median household income is another measure of the economic condition of an area relative to other areas. The median income is the value at which one-half of the households have incomes above and one-half of the households have incomes below the median value. The state of Virginia's median income was about 111 percent of the national value in 1989 and 1999 (Table 3.7). In 1989 the selected area median incomes ranged from 78 percent to 98 percent of the state median. Frederick County nearly matched the state figure in 1989 and was actually slightly higher than the state in 1999. By 1999 the selected area median incomes ranged from nearly 74 percent to about 101 percent of the state median. While all median household incomes increased from 1989 to 1999, not all areas improved relative to the state. For the most part, the majority of the three-county area remained a less prosperous region than the state of Virginia as a whole.

Table 3.7 Median Household Income

| Area | 1989 | % of 1989 State PCPI | 1999 | % of 1999 State PCPI | 2004 | % of 2004 State PCPI |
|-------------------|-----------------|----------------------|-----------------|----------------------|-----------------|----------------------|
| Winchester | \$26,086 | 78.3% | \$34,335 | 73.6% | \$39,142 | 76.6% |
| Frederick County | \$32,806 | 98.4% | \$46,941 | 100.6% | \$49,193 | 96.3% |
| Shenandoah County | \$26,527 | 79.6% | \$39,173 | 83.9% | \$43,893 | 85.9% |
| Warren County | \$31,062 | 93.2% | \$42,422 | 90.9% | \$55,084 | 107.8% |
| Virginia | \$33,328 | 100.0% | \$46,677 | 100.0% | \$51,103 | 100.0% |
| USA | \$30,056 | 90.2% | \$41,994 | 90.0% | \$44,334 | 86.8% |

Source: U.S.D.C., U.S. Census Bureau 1990d and 2000b

By 2004, Virginia state median income had increased to \$51,103 (Table 3.7). This was 115 percent of the national median of \$44,334. The median incomes for Winchester and the three counties also increased. The median income for Winchester increased by \$4,800 but this median income was only 77 percent of the 2004 state median. Shenandoah's median income increased by about \$4,700 and amounted to 86 percent of the 2004 state median. Frederick County's increase was about \$2,250 which was 96 percent of the Virginia median. Warren County experienced tremendous improvement; its median income rose to nearly \$55,100, an increase of more than \$12,660. This was nearly 108 percent of the 2004 state figure and 124 percent of the national median.

3.5.4 Low Income Populations

Data readily obtainable from the U.S. Census Bureau are used to identify low income populations. The characteristics used are income (per capita and median household), and percentage of the population living below the poverty level (all persons).

The information presented in Table 3.8 (income and poverty data) identifies Virginia as a state with higher than average per capita and median household incomes. The

Table 3.8 Income and Poverty, 2000

| Area | Per Capita | Money Income | | | Number and Percent Living Below the Poverty Level | |
|-------------------|---------------|----------------------|------------------|------------------|---|--------------|
| | | % of U.S. Per Capita | Median Household | % of U.S. Median | Individuals | Individuals |
| Frederick County | 21,080 | 97.7% | 46,941 | 111.8% | 3,727 | 6.4% |
| Shenandoah County | 19,775 | 91.5% | \$39,173 | 93.3% | 2,837 | 8.2% |
| Warren County | 19,841 | 91.9% | \$42,422 | 101.0% | 2,631 | 8.5% |
| Virginia | 23,975 | 111.1% | \$46,677 | 111.2% | 656,641 | 9.6% |
| USA | 21,587 | 100.0% | \$41,994 | 100.0% | 22,899,812 | 12.4% |

Source: U.S.D.C., U.S. Census Bureau 2000c

percentage of people living in poverty in Virginia was lower than the national average as well. All three counties also had poverty rates that were considerably lower than the state and national rates. The figures for income were somewhat more ambiguous for the counties. Frederick County was the only county where the median household income was higher than both the state and national median household incomes. However, its per capita income was far below that of Virginia. Per capita incomes for all three counties were lower than the state and national per capita incomes.

3.5.5 Earnings by Major Industries

All three counties have somewhat diversified economies, since they all have some earnings and employment in each of the major industrial sectors. But as shown in Table 3.9, certain industrial sectors were more important than others. In Frederick County including the City of Winchester for this analysis, the top three industry sectors by earnings (in 2004) were manufacturing (23.5% of total earnings), retail trade (10.0%), and local government (7.9%). Total earnings for the area were \$2.268 billion. These three sectors accounted for over 41 percent of the total. Two industry sectors are most closely associated with tourism—the arts, entertainment, and recreation sector and the accommodation and food services sector. Together these tourism sectors provided 3.1 percent of all earnings for the area,¹ and accounted for 3.0 percent of Virginia’s total earnings of more than \$213.341 billion for 2004.

While the population of Shenandoah County was less than one-half that of Frederick County and Winchester, total earnings were slightly more than one-fourth of the total for earnings in Frederick County and Winchester. The major industries, by earnings, in Shenandoah County, in 2004, were manufacturing (37.4% of total earnings), local government (9.4%), and retail trade (8.3%). Total earnings for the area were about \$0.598 billion. These three sectors accounted for over 55 percent of the total. Tourism (the arts, entertainment, and recreation sector and the accommodation and food services sector) provided about 3.5 percent of all earnings.

With a population of about two-fifths the size of Frederick County and the City of Winchester, Warren County’s total earnings in 2004 of approximately \$0.442 billion was one fifth that of Frederick County and Winchester. The largest sectors were construction (13.4% of the total), local government (12.3%), and transportation and warehousing (10.9%). These three sectors provided about 37 percent of the total earnings for the county. Tourism (the arts, entertainment, and recreation

¹ Not all of the earnings in these two industry segments are attributable to tourism as economic activity by locals and non-tourists will also contribute to earnings in these two sectors. It is also acknowledged that some spending by tourists in other sectors (e.g. retail trade and health care) will occur within the two-county region. However, the use of these two sectors as a proxy for tourism spending does provide a frame of reference for comparison.

Table 3.9 Earnings by Industry, 2004 (thousands of \$)

| Industry | Frederick County and Winchester City | Shenandoah County | Warren County |
|--|--|----------------------|------------------|
| Farming | \$5,928 | \$14,350 | \$1431 |
| Forestry, fishing, etc. and other | (D) | \$2,010 | (D) |
| Mining | (D) | \$176 | \$176 |
| Utilities | (D) | \$4,817 | \$302 |
| Construction | (D) | \$44,257 | \$59,094 |
| Manufacturing | \$532,352 | \$223,702 | (D) |
| Wholesale trade | \$111,174 | \$12,989 | (D) |
| Retail trade | \$227,815 | \$49,524 | \$40,045 |
| Transportation and warehousing | (D) | \$22,282 | \$48,235 |
| Information | \$28,498 | \$19,122 | \$5,608 |
| Finance and insurance | \$70,957 | \$14,587 | \$13,424 |
| Real estate and rental and leasing | \$63,836 | \$7,776 | \$9,879 |
| Professional and technical services | \$90,225 | \$14,135 | \$16,126 |
| Management of companies and enterprises | \$58,740 | \$2,733 | \$5,490 |
| Administrative and waste services | \$67,306 | \$4,685 | \$9,818 |
| Educational services | (D) | (D) | \$11,428 |
| Health care and social assistance | (D) | (D) | \$43,917 |
| Arts, entertainment and recreation | \$12,707 | \$1,266 | \$4,965 |
| Accommodation and food services | \$57,833 | \$19,831 | \$12,647 |
| Other services, except public administration | \$66,047 | \$21,570 | \$29,295 |
| Federal, civilian | \$44,795 | \$9,355 | \$14,592 |
| Military | \$11,704 | \$4,763 | \$4,271 |
| State government | \$24,235 | \$7,553 | \$2,846 |
| Local government | \$178,145 | \$55,907 | \$54,491 |
| Total | \$2,268,473 | \$597,825 | \$441,607 |

(D) = Not shown to avoid disclosure of confidential information. However, the estimates are included in the totals.

Source: U.S. Department of Labor, Bureau of Economic Analysis 2006b

sector and the accommodation and food services sector) provided about 4.0 percent of all earnings.

Total earnings for the entire region were nearly \$3.307 billion in 2004.

Approximately 4.2 percent of this total is estimated to be related to tourism in the region.

3.5.6 Employment by Major Industries

The major sources of employment in Frederick County and Winchester were manufacturing (15.7% of the total), retail trade (13.8%), and local government (7.1%). These industries provided over one-third of all the nearly 62,100 positions

Table 3.10 Total Full- and Part-Time Employment by Industry, 2004

| Industry | Frederick County and Winchester City | Shenandoah County | Warren County |
|--|--|----------------------|-----------------|
| Farming | \$894 | \$1,262 | \$328 |
| Forestry, fishing, etc. and other | (D) | \$97 | (D) |
| Mining | (D) | \$10 | 10 |
| Utilities | (D) | \$79 | (D) |
| Construction | (D) | \$1,447 | \$1,685 |
| Manufacturing | \$9,733 | \$4,678 | (D) |
| Wholesale trade | \$2,402 | \$373 | (D) |
| Retail trade | \$8,560 | \$2,346 | \$1,963 |
| Transportation and warehousing | (D) | \$570 | \$1,263 |
| Information | \$582 | \$458 | \$127 |
| Finance and insurance | \$1,568 | \$498 | \$417 |
| Real estate and rental and leasing | \$2,620 | \$601 | \$531 |
| Professional and technical services | \$2,492 | \$534 | \$535 |
| Management of companies and enterprises | \$562 | \$41 | \$182 |
| Administrative and waste services | \$3,557 | \$387 | \$561 |
| Educational services | (D) | (D) | \$575 |
| Health care and social assistance | (D) | (D) | \$1,369 |
| Arts, entertainment and recreation | \$999 | \$209 | \$359 |
| Accommodation and food services | \$3,695 | \$1,441 | \$889 |
| Other services, except public administration | \$3,037 | \$1,219 | \$1,208 |
| Federal, civilian | \$477 | \$145 | \$167 |
| Military | \$334 | \$140 | \$126 |
| State government | \$730 | \$186 | \$74 |
| Local government | \$4,389 | \$1,567 | \$1,405 |
| Total | \$62,147 | \$19,723 | \$14,757 |

(D) = Not shown to avoid disclosure of confidential information. However, the estimates are included in the totals.

Source: U.S. Department of Labor, Bureau of Economic Analysis 2006b

in 2004 (Table 3.10.).² Tourism, including the arts, entertainment, and recreation sector, and the accommodation and food services sector provided 7.5 percent of the jobs in this county. These positions are often seasonal and/or part-time, rather than full-time, and can be relatively low paying. As a result, these sectors provide 7.5 percent of the jobs but only 3.1 percent of the earnings. The largest sources of jobs do not necessarily provide the largest earnings in a local economy.

² Not all of the jobs in these two industry segments are attributable to tourism because economic activity by local residents and non-tourists will also help support positions in these two sectors. It is also acknowledged that some spending by tourists in other sectors (e.g. retail trade and health care) will occur within the two-county region. However, the use of these two sectors as a proxy for tourism's economic impact does provide a frame of reference.

Again, while all three counties' economies are somewhat diversified, a few industry sectors account for most of the employment opportunities. Three of the 24 industrial sectors accounted for nearly 44 percent of the more than 19,700 jobs in Shenandoah County in 2004. The three major employers were manufacturing (15.7% of the total), retail trade (13.8%), and local government (7.1%). In this county tourism related positions in the arts, entertainment, and recreation sector and the accommodation and food services sector made up about 8.4 percent of the jobs.

The three sectors providing the most jobs in Warren County were retail trade (13.6% of the total), construction (11.7%), and local government (9.7%), accounting for 35 percent of the nearly 14,800 total jobs in the county.

The entire Virginia economy supported about 4,594,000 full- and part-time jobs in 2004. The total number of positions (about 97,000) in the region made up approximately 2.1 percent of this total. In the region, the two tourism sectors accounted for less than 0.2 percent of the total jobs in Virginia.

3.5.7 Unemployment

The unemployment situation in the region improved across the board between 1990 and 2000 (Tables 3.11 and 3.12). In 1990 unemployment in the three counties and the City of Winchester ranged from 3.8 percent in Shenandoah County to 5.1 percent in Warren County. Over 3,000 workers out of a labor force of about 66,700 were out of work (Table 3.11).³ The unemployment rate for the three-county region (including Winchester) was about 4.4 percent. Winchester's unemployment rate separately was 4.8 percent. Unemployment at the state level was 4.5 percent and nationally it was 6.3 percent.

The situation improved in 2000 as the national unemployment rate dropped to 5.8 percent and Virginia's rate fell to 4.2 percent (Table 3.12). The unemployment rates for the three counties also improved as they ranged from 2.5 percent in Frederick County to 3.4 percent in Warren County. Regionally the labor force increased to about 78,900 and yet only a little more than 2,400 workers were out of work, a 3.1 percent unemployment rate for the region. However, the City of Winchester's unemployment rate declined only slightly to 4.6 percent.

The employment situation in 2005 continued to improve for the state and the nation as the unemployment rate fell to 3.5 percent for Virginia, and fell to 5.1 percent for the nation as a whole (Table 3.13). The unemployment conditions improved for Winchester and Warren County as their rates fell to 3.0 percent and 2.9 percent. Frederick County's unemployment rate fell slightly to 2.9 percent while the rate for

³ Winchester is an independent city in Virginia and census data are collected and reported separate from Frederick County. The totals for the region include data for Frederick, Shenandoah, and Warren counties plus the data for the city of Winchester.

Table 3.11 Employment and Unemployment Status, 1990

| Area | Civilian Labor Force | Employed | Unemployed | Percent of Civilian Labor Force Unemployed |
|-------------------|----------------------|--------------------|------------------|--|
| Winchester | 11,977 | 11,405 | 572 | 4.8% |
| Frederick County | 24,925 | 23,845 | 1,080 | 4.3% |
| Shenandoah County | 16,233 | 15,622 | 611 | 3.8% |
| Warren County | 13,554 | 12,856 | 698 | 5.1% |
| Virginia | 3,170,410 | 3,028,362 | 142,048 | 4.5% |
| USA | 123,473,450 | 115,681,202 | 7,792,248 | 6.3% |

Source: U.S.D.C., U.S. Census Bureau 1990b

Table 3.12 Employment and Unemployment Status, 2000

| Area | Civilian Labor Force | Employed | Unemployed | Percent of Civilian Labor Force Unemployed |
|-------------------|----------------------|--------------------|------------------|--|
| Winchester | 12,732 | 12,147 | 585 | 4.6% |
| Frederick County | 31,720 | 30,930 | 790 | 2.5% |
| Shenandoah County | 18,204 | 17,710 | 494 | 2.7% |
| Warren County | 16,245 | 15,687 | 558 | 3.4% |
| Virginia | 3,563,772 | 3,412,647 | 151,125 | 4.2% |
| USA | 137,668,798 | 129,721,512 | 7,947,286 | 5.8% |

Source: U.S.D.C., U.S. Census Bureau 2000b

Table 3.13 Employment and Unemployment Status, 2005

| Area | Civilian Labor Force | Employed | Unemployed | Percent of Civilian Labor Force Unemployed |
|-------------------|----------------------|--------------------|------------------|--|
| Winchester | 14,198 | 13,770 | 428 | 3.0% |
| Frederick County | 38,558 | 37,584 | 974 | 2.5% |
| Shenandoah County | 19,697 | 19,153 | 544 | 2.8% |
| Warren County | 18,594 | 18,056 | 538 | 2.9% |
| Virginia | 3,933,949 | 3,797,730 | 136,219 | 3.5% |
| USA | 141,730,000 | 141,730,000 | 7,591,000 | 5.1% |

Source: U.S.D.C., U.S. Census Bureau 2006a

Shenandoah County remained the same. By 2005 the regional labor force had grown to more than 91,000 while less than 2,500 persons were unemployed—creating an unemployment rate of just 2.7 percent.

3.5.8 Poverty

Both Frederick and Warren counties experienced lower poverty rates than the state or nation in 1989 and in 1999 (Table 3.14). In 1989 Shenandoah County had an unemployment rate of 11 percent, falling between the Virginia rate of 10.2 percent and the national rate of 13.1 percent. Winchester also had a higher than state average of 11.3 percent in 1989, with nearly 2,400 people living below the poverty level. In the three-county region (including Winchester) over 10,900 people were living with incomes below the poverty level, an 8.9 percent poverty rate.

Table 3.14 Poverty Status, 1989, 1999 and 2004

| Area | 1989 Number of Individuals below the Poverty Level | 1989 Percent below the Poverty Level | 1999 Number of Individuals below the Poverty 1989 | 1999 Percent below the Poverty Level | 2004 Number of Individuals below the Poverty 1989 | 2004 Percent below the Poverty Level |
|-------------------|---|--|--|--|--|--|
| Winchester | 2,364 | 11.3% | 2,991 | 13.2% | 2,811 | 11.5% |
| Frederick County | 3,197 | 7.1% | 3,727 | 6.4% | 3,989 | 5.8% |
| Shenandoah County | 3,414 | 11.0% | 2,837 | 8.2% | 3,349 | 8.6% |
| Warren County | 1,965 | 7.7% | 2,631 | 8.5% | 3,114 | 8.9% |
| Virginia | 611,611 | 10.2% | 656,641 | 9.6% | 705,037 | 9.5% |
| USA | 31,742,864 | 13.1% | 33,899,812 | 12.4% | 37,039,804 | 12.7% |

Source: U.S.D.C., U.S. Census Bureau, 1990b and 2000b

In 1999, the national and state poverty rates declined even though the numbers of people living in poverty increased. Frederick County and Shenandoah County experienced the same situation. The poverty rate declined from 7.1 percent to 6.4 percent in Frederick County but the number of people in poverty increased from 3,200 to 3,700 people. For Shenandoah County the rate declined from 11.0 percent to 8.2 percent and the number of people living in poverty also declined by nearly 600 people. Unfortunately, in Warren County the poverty rate and the number of people living in poverty both increased, from 7.7 percent to 8.5 percent and from 1,965 to 2,631 respectively. Winchester had the highest poverty rate at 13.2 percent, with nearly 3,000 people living below the poverty level.

Overall, in 1999, the number of people in poverty in the region had increased to almost 12,200, an 8.3 percent rate. However, this was still better than the state rate of 9.6 percent or the national rate of 12.4 percent.

By 2004, the number of people living in poverty in Winchester had fallen by 180; resulting in a lower poverty rate of 11.5 percent. This was still higher than the state poverty rate of 9.5 percent but lower than the national rate which had increased to 12.7 percent. Frederick County's poverty rate declined to 5.8 percent but the total number of people living in poverty rose by 262 people. Both the number of persons living in poverty and the poverty rate rose for Shenandoah (512 additional persons and an 8.6% rate) and Warren counties (483 additional persons and an 8.9% rate).

3.5.9 Economic Impact of the Park

■ Park Sites and Projected Park Visitation

About one-third of the area of the park is composed of a variety of sites that are owned and operated independently by the NPS and its five major partners: the National Trust for Historic Preservation, Belle Grove, Inc., the Cedar Creek Battlefield Foundation, the Shenandoah Valley Battlefields Foundation, and Shenandoah County Parks and Recreation. The remaining two-thirds of the park is privately owned.

Transportation planning conducted for the park projected that annual visitation to all parts of the park could reach between 50,000 and 250,000 as the park is developed over the next two decades (USDOT 2006).

Whitham Tract. The NPS owns an 8.0-acre site that, currently, is not open to the public. This property is relatively out of the way, is leased as a private residence, and currently contains no NPS operated facilities.

Wilson House. The NPS owns a 1.78-acre site at 8693 Valley Pike with a 1950s era refurbished home, located on Valley Pike south of Middletown. While the property is currently not open to the public, NPS may use it in the future as an administrative office and possibly for public interpretive displays.

Belle Grove Plantation. Belle Grove Plantation, a 283-acre site, is owned by the National Trust for Historic Preservation. The property contains a manor house and gardens, outbuildings, an orchard, and agricultural fields. The manor house is open to the public from April to November. An admission fee is charged. The manor has been open to the public as a historic house museum since 1967. Visitation at Belle Grove Plantation is in the neighborhood of 10,000 annually (USDOT 2006). Belle Grove, Inc., a nonprofit corporation, operates and protects the historic resources and historic landscape on the property.

Harmony Hall. Historic Harmony Hall (Fort Bowman), located within the park on the Shenandoah River, is owned by Belle Grove, Inc. Belle Grove, Inc. is currently rehabilitating the house and will be making it available for small, infrequent tours in the near future. Larger, more frequent tours could occur depending on public

interest. The enabling legislation of the park states as a goal that the site should be open to the public.

Cedar Creek Battlefield. Portions of the Cedar Creek Battlefield are owned by the Cedar Creek Battlefield Foundation and the Shenandoah Valley Battlefields Foundation, both nonprofit corporations. Within the park, Cedar Creek Battlefield Foundation owns 308.59 acres, and Shenandoah Valley Battlefields Foundation owns 460.3 acres and a 32-acre conservation easement. Portions of the battlefield that are owned by the Shenandoah Valley Battlefields Foundation are leased for agricultural use and are not open to the public.

The Cedar Creek Battlefield is visited by large numbers of re-enactors and visitors, especially during the battle reenactments. The Cedar Creek Battle reenactment is hosted annually by the Cedar Creek Battlefield Foundation in early October on part of the original battle site. Estimates place the visitation at about 5,000 re-enactors and 7,000 visitors during the last reenactment in October 2005 (USDOT 2006). The Foundation has also hosted the reenactment of First Manassas battle (First Bull Run) in late July. The Manassas reenactment in July 2006 attracted about 7,000 re-enactors and 10,000 spectators. Interest in these reenactments is strong as people have come to recognize the importance of the Civil War as a defining event that helped shape the character of the United States.

Battlefield Headquarters. Located in Middletown, the Cedar Creek Battlefield Foundation owns and operates a visitor contact station that is open to the public on a limited seasonal basis.

Keister Tract. The 151-acre Keister Tract is owned by Shenandoah County Parks and Recreation Department and is located in the park along the North Fork of the Shenandoah River. The county plans to develop the site as part of the national historical park. Currently, the site is not open to the public—it is leased for agricultural use. The master plan completed for the site includes the development of an interpretive center and comfort stations, walking and equestrian trails, tent camping, river access, an outdoor classroom and amphitheater, and an adventure course (Shenandoah County Parks and Recreation 2005). Regional trail connections are also planned to link the site to other local and regional visitor attractions. Visitation to the Keister Tract is expected to reach 50,000 to 100,000 annually when the property is fully developed (USDOT 2006).

■ Staffing and Budgets

National Park Service. NPS staffing is currently limited to two full-time equivalent (FTE) positions; the Park Superintendent and a Community Planner. NPS annual expenditures to support the park represent an input of federal funds into the regional economy. For the fiscal year 2007 the park budget was \$277,000. The

park's recent annual budgets are displayed in Table 3.15. These funds are primarily used for park administration and planning at this time.

Partners. The total number of FTEs employed by the Key Partners that are specifically tied to land and facility administration in the park is estimated at six to seven. Several of the Key Partners have staff solely dedicated to park management issues, while other Key Partners have staff that divide their time between park issues and other lands outside of the park that are within their jurisdiction. The Key Partners also have volunteers that assist them with their work. Total annual budgets are not known, but annual operational expenses for the Key Partners are estimated at \$660,000 (Stubbs 2007).

Table 3.15 Annual Budgets for Cedar Creek and Belle Grove NHP

| Fiscal Year | Total |
|-------------|-----------|
| 2007 | \$277,000 |
| 2006 | \$275,000 |
| 2005 | \$275,000 |
| 2004 | \$233,000 |

Source: National Park Service

■ Economic Impacts on the Local and Regional Economy

The current economic impacts of the park consist of NPS and partner activities and contributions. Expenditures in the area by the NPS and the Key Partners result in direct economic effects and their employees' expenditures of wage and salary income result in further indirect effects as the funds re-circulate within the regional economy, adding additional amounts to sales, income, and jobs. Expenditures in the region include such things as employee salaries and benefits, office rent and utilities, office supplies, etc. These expenditures are direct impacts resulting from the onsite presence of the NPS and the Key Partners. Indirect economic impacts occur as employees spend their salaries for food, housing, etc.

National Park Service. Current fiscal and employment impacts of the NPS are primarily limited to the two FTE positions currently filled and the park budget (\$277,000 in FY2007) used to support their work. Payments in Lieu of Taxes (PILT) are also made by the federal government (U.S. Treasury) to Warren County for the NPS-owned parcel. The law that mandates payments in lieu of taxes requires two types of payments: Section 6904 payments and Section 6902 payments. Section 6904 payments are based on a percentage of the fair market value of the land at the time of acquisition and are made annually for five years from the date of acquisition. The first Section 6902 payment of \$973.52 was made to Warren County in June 2004 (Leisz 2007). The last 6902 payment will be made in the year 2008. Section 6904 payments are based on the number of acres of "entitlement

lands,” or federal lands that exist in the county and are paid to the affected unit of government in perpetuity, subject to Congressional authorization. The first Section 6904 payment of approximately \$11 that is attributed to park acreage was made to Warren County in 2004 (Leisz 2007).

Partners. Current fiscal and employment impacts of the partners are limited to the roughly six to seven positions currently filled and the estimated \$660,000 annual operational expenditures used to support their work. The partner’s activities represent the majority of any economic impacts that have occurred since the creation of the park.

