

Affected Environment



INTRODUCTION

This chapter describes the existing environment of the Manassas National Battlefield Park and the surrounding region. This section focuses on describing the key park resources, uses, facilities and socioeconomic characteristics, the necessary background and setting information for the study team to determine the likely affects of the proposed actions that are described in the Environmental Consequences section. Some features are also discussed because they provide context, and/or must be considered in environmental impact statements.

The affected environment section is general in nature because of the programmatic nature of

this study. There are many sources from which more detailed information can be obtained on the natural, cultural, and human environment of Manassas National Battlefield Park. Many of these sources were used in the preparation of this *General Management Plan/Environmental Impact Statement*. Additional information on the park resources can also be found on the Manassas National Battlefield Park homepage at <http://www.nps.gov/mana> and in the *Manassas National Battlefield Park Bypass Existing Conditions Report* (FHWA, 2003) prepared by the Federal Highway Administration.

NATURAL ENVIRONMENT

AIR QUALITY

National Ambient Air Quality Standards for certain major air pollutants, including sulfur dioxide, nitrogen oxides, particulate matter, ozone, carbon monoxide, and lead, were established under the 1970 Clean Air Act Amendments. Areas in the United States, which meet or exceed these standards, are known as attainment areas. Areas in which the standards are not met are known as nonattainment areas. Manassas National Battlefield Park is in Virginia Air Quality Control Region VII, which is in severe nonattainment for ozone (the region is in attainment for the other pollutants). Section 118 of the Clean Air Act requires federal facilities such as the Manassas National Battlefield Park to comply with all federal and state air quality standards and regulations, while Section 176 of the Act requires federal facilities to conform to state programs designed to attain and maintain those standards.

The 1977 Clean Air Act Amendments established a program to preserve, protect, and enhance the air quality in certain areas of the United States. One hundred and fifty-eight of those areas, including national parks over 6,000 acres and wilderness areas over 5,000 acres, were designated mandatory Class I areas with little additional air pollution permitted over baseline concentrations. Stringent air quality standards, known as increments, were established for those areas for certain air pollutants, including sulfur dioxide, nitrogen oxides, and particulate matter, from new or modified existing major stationary sources. The nation's remaining areas, such as Manassas National Battlefield Park, are Class II areas. The Clean Air Act established less stringent increments for those areas for the three pollutants cited above.

The major source of air pollution within the park is vehicle emissions. However, the major sources of regional air pollution are outside the park and include stationary sources in the surrounding counties, motor vehicle use in the

region, and other sources in the Washington, D.C. metropolitan area. Historically significant views and the visual setting are integral to the visitor experience and can be diminished by air pollution.

SOUNDSCAPE

National Park Service's *Management Policies 2001* and Director's Order 47 "Soundscape Preservation and Noise Management" recognize natural soundscapes as a park resource and call for the National Park Service to preserve natural soundscapes. Presently, the soundscape and noise levels at the park are greatly influenced by vehicular and truck traffic on U.S. Route 29, VA Route 234, and I-66.

The National Park Service conducted a traffic noise and vibration assessment in 1996. The vibration assessment looked at the effects of vibration from the vehicular traffic on the park resources such as the Stone House, and the traffic noise assessment examined the effect of traffic on the visitor experience. The study found that the risk to the building resulting from damage caused by traffic-induced vibration is small (Peccia, 1996).

In contrast, the noise assessment stated that the existing traffic noise levels create noise impacts serious enough to consider noise abatement at several of the key visitor sites at the park (Peccia, 1996). When noise levels were compared to land-use compatibility guidelines, many of the park's resources would be discouraged from use as sites for cultural activities because of existing noise levels.

VEGETATION AND WILDLIFE

Vegetation

The park's vegetation is a patchwork of open fields and a range of forest communities representing different successional stages and ecological conditions. The open fields are maintained through agricultural leases and mowing by park personnel. Many of these

grasslands contain native grass communities, particularly Indian grass-little bluestem. Grasslands cover about 35 percent of the park. The forest communities, which cover approximately 50 percent of the park, are primarily deciduous stands of oak-hickory, pine/cedar forest, mixed pine/hardwood stands, and bottomland hardwood stands.

The Virginia Department of Conservation and Recreation, Division of Natural Heritage completed a vascular plant inventory of Manassas National Battlefield Park in March 2001. The species list was added to the Virginia Biological and Conservation Data System. Of over 700 taxa inventoried in the park, 124 are invasive, exotic species.

The coniferous forest (mainly pine/cedar community) is in a successional stage of growth that developed from previously open fields and is characterized by Virginia pine (*Pinus virginiana*), eastern red cedar (*Juniperus virginiana*), and shortleaf pine (*Pinus echinata*). The mixed forest is in a transitional stage that occurs in comparatively small, scattered stands. Oak-hickory dominates the deciduous forest in upland areas and represents the climax growth stage in the park. Stands are often more than 100 years old and commonly consist of white oak (*Quercus alba*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), white ash (*Fraxinus americana*), and hickory (*Carya sp.*).

Floodplain bottomland forests, found primarily along Bull Run, represent old undisturbed forests with many mature floodplain trees. Tree species include pin oak (*Quercus palustris*), swamp white oak (*Quercus bicolor*), green ash (*Fraxinus pennsylvanica*) and American elm (*Ulmus americana*). Various bottomland hardwoods also occur along the riparian fringe of tributary streams. Small patches of loblolly pine (*Pinus taeda*) and eastern white pine (*Pinus strobus*) occur on somewhat drier slopes and bluffs (VDCR DNH, 2001). Map 3-1 depicts the historic vegetative communities that existed at the time of the Battles of Manassas.

Wildlife







To date, park staff has documented 168 bird, 26 mammal, 23 reptile, and 19 amphibian species within the park. The NPS maintains a current list of species known or likely to use the habitat of the park. More detailed information can be found on the park's website at <http://www.nps.gov/mana/pphtml/managementdocuments.html>. Common species known to occur in the park include whitetail deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), and many species of songbirds.

Within Manassas National Battlefield Park, mammals are protected from hunting pressure and surrounding urban development. The fragmented forests interspersed with shrubs and meadows are good habitats for mammals such as eastern fox squirrels, eastern chipmunks, eastern cottontails, short-tailed shrews, and the eastern mole. Some are more specialized in their habitat needs, like the red fox, which prefers open, shrubby, and brushy areas. White-tailed deer are among the most prominent mammals in Manassas National Battlefield Park. Numerous amphibians and reptiles also can be found in the park near vernal pools, small depressions and other wetlands. Spring peepers, wood frogs, and spotted and marbled salamanders are other amphibians commonly found in the park.










Neotropical migratory birds are species that nest in North America during the spring and summer months and migrate south as far as Mexico, the Caribbean, or Central and South America for winter. Some birds are considered short-distance migrants, with some individuals migrating to the southern U.S. and others remaining on the breeding grounds. Resident or short-distance migrants in the park include species such as the American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), and common grackle (*Quiscalus quiscula*).

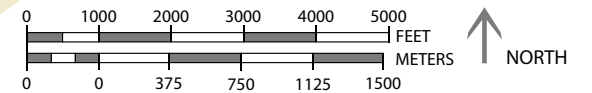
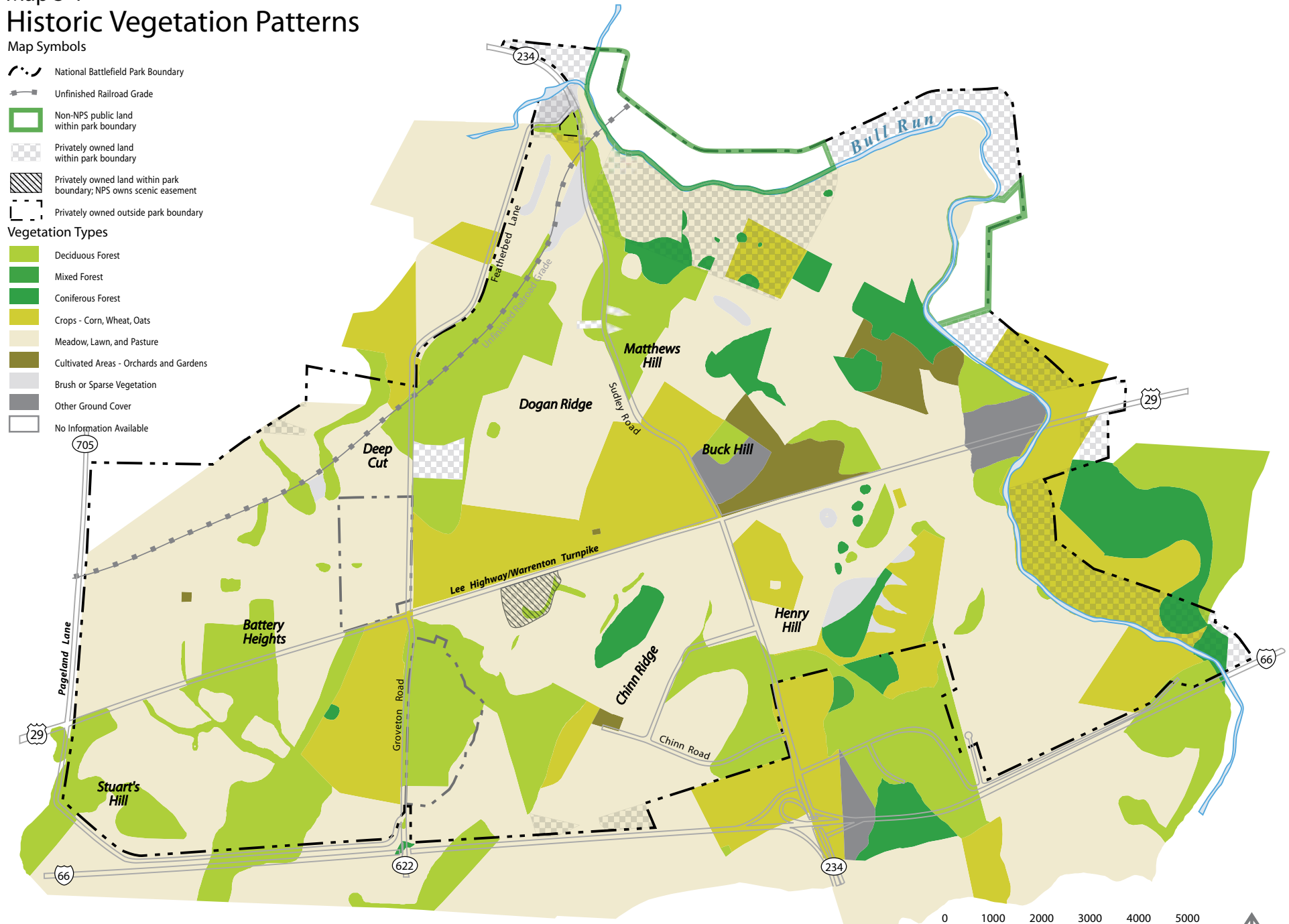
Map 3-1 Historic Vegetation Patterns

Map Symbols

-  National Battlefield Park Boundary
-  Unfinished Railroad Grade
-  Non-NPS public land within park boundary
-  Privately owned land within park boundary
-  Privately owned land within park boundary; NPS owns scenic easement
-  Privately owned outside park boundary

Vegetation Types

-  Deciduous Forest
-  Mixed Forest
-  Coniferous Forest
-  Crops - Corn, Wheat, Oats
-  Meadow, Lawn, and Pasture
-  Cultivated Areas - Orchards and Gardens
-  Brush or Sparse Vegetation
-  Other Ground Cover
-  No Information Available



Neotropical migrants are adapted to a wide range of breeding habitats, from early successional grasslands, open fields, and shrublands to mature forests. Some species prefer early edge habitats such as boundaries where open fields abut forests. Edge species known to inhabit areas of the park near potential historic landscape modifications include the eastern meadowlark (*Sturnella magna*), prairie warbler (*Dendroica discolor*), indigo bunting (*Passerina cyanea*), grasshopper sparrow (*Ammodramus savannarum*), yellow-breasted chat (*Icteria virens*), American goldfinch (*Carduelis tristis*), barn swallow (*Hirundo rustica*), and eastern bluebird (*Sialis sialis*). Other species typically found in edge or forested areas include the common yellow-throat (*Geothlypis trichas*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), eastern wood pewee (*Contopus virens*), and chimney swift (*Chaetura pelagica*).

Other species are adapted to the forest interior and primarily nest away from edges in the deep forest. Many of these forest interior species require large (>375 acre) contiguous tracts of forest for breeding and few are found in smaller forest stands of less than 25 acres (USFS 1996, 1992). Only a few forest interior species are known to occur in the areas of potential landscape modification. These include the scarlet tanager (*Piranga olivacea*), Acadian flycatcher (*Empidonax virens*), blue-gray gnatcatcher (*Poleoptila caerulea*), and wood thrush (*Hylocichla mustelina*). These four species are area-sensitive species that are more common in larger rather than smaller wooded areas and may not successfully breed in small patches of otherwise suitable habitat. Although these birds are considered forest interior species, they do occur in less than optimum conditions and can be found in areas other than forest interior habitat.

Threatened, Endangered, and Rare Species and Natural Communities

Manassas National Battlefield Park is classified under the Piedmont Region, Culpeper Basin. This Triassic basin historically supported a number of plants now considered rare by the

Commonwealth of Virginia. Since settlement by Europeans, the original grasslands in Prince William County that supported these now scattered populations have been eliminated by agriculture, suppression of natural fires, and construction. In recent years, large portions of the Triassic basin in Prince William and surrounding counties have been subjected to intensive development pressure as the metropolitan Washington, D.C. area has expanded westward. As a result, many of the natural areas in the surrounding region have been destroyed, and the park is increasingly becoming a natural oasis as development in the region increases.

In 1997-8, the Virginia Department of Conservation and Recreation's Division of Natural Heritage inventoried Manassas National Battlefield Park for rare, threatened, and endangered species and significant natural communities. According to that report, Manassas National Battlefield Park is "one of the region's most unspoiled areas" (VDCR DNH, 1998). The rare and significant habitats that occur in Manassas National Battlefield Park are the upland depression swamp forest, oak-hickory forest (both threatened elsewhere in Virginia due to development), eastern white pine forest, and piedmont mountain swamp forest.

A further state Division of Natural Heritage study, completed in 1997, inventoried potential habitats within the park for threatened, endangered, and rare species and significant natural communities. This inventory found no federally or state-listed threatened or endangered species. Similarly, the 1997 vascular plant inventory found no federal or state endangered species.

However, some rare plants do occur in Manassas National Battlefield Park. The DNH studies identified 13 occurrences of state-listed rare plants associated with diabase or metasilstone substrates, including four each of Appalachian quillwort (*Isoetes appalachiana*) and marsh hedgenettle (*Stachys pilosa* var. *arenicola*), two each of blue hearts (*Buchnera americana*) and hairy beardtongue (*Penstemon hirsutus*), and one of buffalo clover (*Trifolium*

reflexum). Other rare species documented include Mead's sedge (*Carex meadii*), hoary puccoon (*Lithospermum canescens*), and purple milkweed (*Asclepias purpurascens*).

The populations of Appalachian quillwort were in found small, shallow intermittent streams. Hairy beardtongue, blue-hearts, and marsh hedgenettle are associated with open habitats. The park contains the majority of the known Virginia populations of marsh hedgenettle. Buffalo clover is characteristic of prairies and savannas west of the Appalachians and was found in an open canopied Virginia pine stand.

The state Division of Natural Heritage also found six occurrences of communities considered rare or significant. Three occurrences of basic oak-hickory forest, covering about 72 acres, were found in the western portion of the park on diabase uplands. These stands are classified as white oak/eastern redbud/bottlebrush grass-cliff muhly. This community type is uncommon to rare in Virginia and is highly threatened due to widespread destruction by development in its primary northern Virginia range. Also found were one occurrence each of upland depression swamp, eastern white pine forest, and Piedmont/mountain swamp forest.

The upland depression swamp comprises about three acres of seasonally flooded wetland south of Battery Heights. This community type is also uncommon to rare in Virginia and is threatened due to widespread destruction by development in its primary northern Virginia range. The eastern white pine forest community consists of a 10 to 15 acre stand of mixed eastern white pine, eastern hemlock, and oaks on a steep bluff overlooking Bull Run. This forest type is significant due to the type's rarity in the Piedmont. The Piedmont/mountain swamp forest covers about 40 acres on the alluvial floodplain of Bull Run. The dominant canopy species is pin oak. Pin oak swamps are rare in Virginia, although they are locally common in the northern Virginia Triassic basin.

While no federally listed, proposed, and candidate threatened or endangered species were known to exist in the park, the U.S. Department of the Interior, Fish and Wildlife Service provided information about threatened and endangered species in Loudoun, Fairfax, and Prince William Counties. The information provided by the Department of the Interior is reproduced in Appendix E: Threatened, Endangered, and Rare Species and Natural Communities.

Bald eagles (*Haliaeetus leucocephalus*) may occasionally be seen, but are transient in the area. A number of rare invertebrate species are known to exist in Prince William County and may potentially occur in the park. Three of these species are state or federal species of concern or state listed. They include two mussels: the state endangered brook floater (*Alasmidonta vericosa*) and the yellow lance (*Elliptio lanceolata*), and a butterfly species of concern: the regal fritillary (*Speyeria idalia*). Other potential rare invertebrates include several aquatic species of amphipods, clubtails, and a stonefly.

WATER RESOURCES (WATER BODIES, WATER QUALITY, WETLANDS, AND FLOODPLAINS)

The park is within the Chesapeake Bay watershed, and its main watercourse is Bull Run, which forms most of the park's eastern boundary. The primary stream within the park is Youngs Branch, which meanders south and east through the park, eventually draining into Bull Run. The Youngs Branch watershed is approximately 3,000 acres, most of it within the park boundary. The main tributary of Youngs Branch begins near Brawner Farm as an intermittent stream. As it flows eastward, it joins with other tributaries including Dogan Branch and Chinn Branch to become a perennial stream. As stream flow increases, the 100-year floodplain widens as permitted by the adjoining terrain. Bull Run has a primarily wooded, asymmetrical 100-year floodplain bounded by adjacent bluffs. Wetlands in the park are typically found along the park's bodies of water. Map 3-2 shows the location of

the streams, ponds, and wetlands at Manassas National Battlefield Park.

There are ten farm ponds scattered throughout the park. Most of these ponds were formed from the installation of small earthen dams on small streams. All dams are classified as downstream, low hazard potential, minor size. In the late 1990s, the park took corrective actions to repair many of the dams. Today, the dams are fixed and are in good condition.

A water quality investigation was conducted for the park in 1995 (Wyatt Group, 1995). All streams sampled were reported to be within acceptable levels, although some stream bank erosion was noted and occasional high levels of fecal coliform were noted after rain. It is the park's practice to plant native species of vegetation in areas where stream bank stability is less than desired. Otherwise, the park maintains bank stability by protecting existing riparian buffer areas. Farm ponds and beaver ponds were noted to have beneficial effects on stream health by removing sediments.

Additional data were collected and presented in the *Baseline Water Quality Data Inventory and Analysis Report (1997)*. The park has recently initiated a basic water quality monitoring program to analyze trends in water quality.

In summer of 1997, the park began a cooperative arrangement with the Audubon Naturalist Society. Since that time the park and the Audubon Society have collected data on water quality and macro-invertebrate diversity while conducting water quality workshops within the park. Preliminary data for Youngs Branch indicates poor diversity within the stream, attributed to high water temperatures caused by poor canopy cover, sediment run-off, and marginal bank stability caused by high storm flows. Lack of a woody buffer along the stream may also have contributed to weak stream banks. Increased flows are probably the result of increased development outside the park.

Water quality monitoring, conducted when possible by the regional water resources division, collects a large amount of data, including water temperature, air temperature, depth of stream, flow rate, specific conductance, oxygen dissolved, pH, salinity, alkalinity, nitrite, phosphorus, ammonia, carbon dioxide, and chloride. This water chemistry data along with macroinvertebrate information allows the park to better evaluate stream health.










The National Park Service officially recognizes the wetland definition used by the United States Fish and Wildlife Service as outlined in *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS 1979).

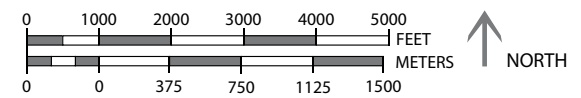
The National Wetland Inventory map (Manassas Quadrangle dated 1983) was reviewed to identify known wetlands at the park. The watercourses in the park, including the adjacent riparian and bottomlands as well as ponds, are classified as various types of wetlands. Palustrine forested wetlands at the park include the floodplain bottomland forests, found primarily along Bull Run. They represent old undisturbed forests with many mature floodplain trees. Species generally include pin oak, swamp white oak, green ash, and American elm.

Two forested wetland systems worthy of special consideration have been identified at the park, including an upland depression swamp and Piedmont/mountain swamp forest. The upland depression swamp comprises about three acres of seasonally flooded wetland south of Battery Heights. The Piedmont/mountain swamp forest covers about 40 acres on the alluvial floodplain of Bull Run (DCR DNH, 1993). Various bottomland hardwoods also occur along the riparian fringe of tributary streams. Small palustrine emergent wetlands also exist sporadically around the park, and they are generally associated near the small ponds or swales at the lower elevations.

Map 3-2 Existing Water Resources and Wetlands

SYMBOL KEY

-  National Battlefield Park Boundary
-  National Battlefield Park Land
-  Unfinished Railroad Grade
-  Non-NPS public land within park boundaries
-  Privately held land within park boundaries
-  Privately held land within park boundaries; NPS holds scenic easement
-  Privately owned land outside park boundary
-  Streams
-  Ponds
-  Wetlands



CULTURAL ENVIRONMENT

Twice in two years, major armies of the United States and the Confederate States met in combat at Manassas. The First Battle of Manassas (July 21, 1861), the war's first major land battle, ended in a stunning Confederate victory that shattered hopes for a short and easy war. Thirteen months later, the Second Battle of Manassas (August 28-30, 1862), a battle four times larger than the first, brought another Southern triumph and gave Confederate forces their greatest opportunity for strategic success.

Manassas National Battlefield Park, established in 1940, preserves important portions of these two overlapping battlefields and the sites associated with them. The cultural resources related to the Civil War that comprise the park survive today as evocative reminders of the nation's fratricidal struggle. The following is a brief description of the cultural resources. More information on each site can be found in Appendix A: Description of Resources Areas and Appendix B: Description of the Battle Events.

HISTORIC STRUCTURES

Manassas National Battlefield Park was listed on the National Register of Historic Places on October 15, 1966, as part of that year's National Historic Preservation Act. The nomination form to follow up on that designation was submitted in 1981. In 2004, the park superintendent submitted a revised concurrent nomination to the Virginia State Historic Preservation Office, to reflect the new park areas added since the 1981 document, and to add non-park land to the National Register boundaries. The nomination has not been approved by the National Register to date.

The revised 2004 form lists 62 contributing structures, monuments, and sites as contributing to the park's significance. These include houses, farms, and Civil War memorials as well as landscape features such as roads, woodlands, and fields important in shaping the battles' events.

The List of Classified Structures (LCS) is an inventory of contributing historic structures that gives guidance to the planning process by providing an inventory and list of treatment measures for these structures. At Manassas National Battlefield Park, 33 structures, including monuments, roads, houses, and a bridge, have been listed on the LCS. Twenty-six of these have been designated as structures that must be preserved and maintained. Another five structures have been categorized as resources that should be preserved and maintained. Two other structures were classified as those that may be preserved or maintained. Map 3-3 highlights the resources included on the park's LCS.

Among the battlefield's historic structures, the Stone House and the Lucinda Dogan House merit special attention as the park's only wartime buildings rehabilitated to their 1860s appearance. Within the park, only one other building, the Thornberry House, dates to the time of the battles, albeit with some alteration. Meanwhile, several other buildings, including the Henry House, John Dogan House, and Brawner Farm House, serve to mark the locations of Civil War period dwellings and function as aids to interpretation.

In addition to the battle-related resources, the park contains a small, but appreciable, number of commemorative features that postdate the fighting. The Henry Hill area includes several monuments and markers. These include the remains of a wartime monument to Confederate Colonel Francis Bartow—which is perhaps the earliest Civil War monument anywhere—and an equestrian statue honoring Confederate General Thomas J. “Stonewall” Jackson, who received his *nom de guerre* nearby. Other prominent monuments include a pair of sandstone obelisks erected by Union veterans in 1865—one on Henry Hill and one adjacent to the Deep Cut—and three monuments commissioned by the State of New York to honor the 5th and 10th New York and the 14th Brooklyn regiments near Groveton.

Those examples notwithstanding, monuments are not extensive at Manassas National Battlefield Park. The park contains less than 20 formal monuments and troop markers scattered across the battlefield. The largest postwar commemorative feature on the battlefield landscape is the Groveton Confederate Cemetery, which contains the remains of more than 260 Confederate dead from the two battles.

CULTURAL LANDSCAPES

In 1996, the National Capital Region of the National Park Service conducted a series of three cultural landscape inventories of different parts of the park. These inventories did not include the Stuart's Hill tract, which had previously been studied by the University Of Georgia School Of Environmental Design. This latter effort produced a cultural landscape rehabilitation report. Each study included a reconnaissance section that identified the scope of the cultural landscape, what is known about the resource, and future research needs. Each study also contained an analysis and evaluation section, which provided a site history of the landscape development; defined the characteristics that contribute to the historic character of the landscape; and identified the individual features associated with those characteristics.

The historic battlefield landscape constitutes the park's most important resource and provides the setting for understanding the events of the Civil War battles fought here. Although the ground cover has changed in some areas, the terrain remains largely unaltered, and key landscape features survive. Within the battlefield landscape are numerous resources that contribute to the parks significance, including historic buildings, archeological sites and ruins, remnants of historic fence lines, cemeteries and burial sites, traces of wartime roads and farm lanes, the reconstructed Stone Bridge, and the graded bed of the Unfinished Railroad.

ARCHEOLOGICAL RESOURCES

Archeological surveys have been carried out in several sections of the park, but no comprehensive park survey has been undertaken. The surveys that have been completed are, for the most part, related to park development projects or specific park research requirements. Since the early 1980s, surveys of selected areas of the park have identified 95 archeological sites. Of these sites, more than two-thirds are in "good" condition. These surveys reveal that the park contains a variety of prehistoric and historic resources.









A park-wide survey of all archeological sites is necessary to identify and evaluate the park's archeological resources and to provide park management with the information necessary to ensure that such resources are protected, conserved, and managed appropriately. Such a survey is also necessary to ensure that park management decisions do not inadvertently impact archeological resources.

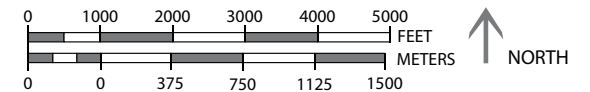
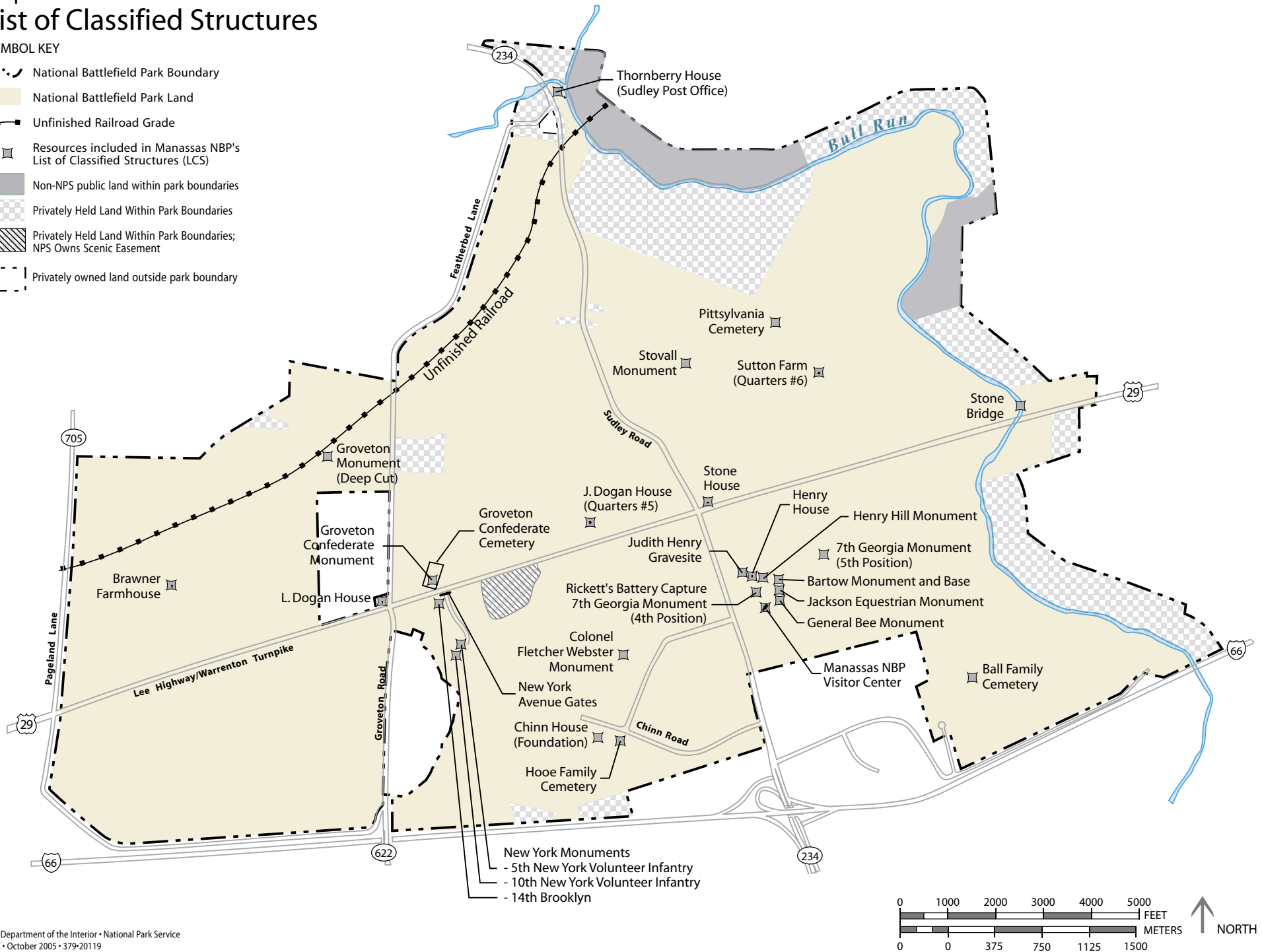
Archeological resources dot the historic landscape and provide evidence of the impact of war on the local community. Physical remains of antebellum plantations, modest farmsteads, slave quarters, and outbuildings combine to demonstrate the complexity of the rural, agricultural setting of the battles and help to delineate the historic scene. In addition to the many ruined house sites, traces of earthworks scattered along Bull Run, remnants of soldiers' huts, and depressions from disinterred battlefield burials are among the archeological features that call to mind the convulsive events of the 1860s.

Nearly all the recorded prehistoric sites need further fieldwork, as there is little available information. One potential prehistoric research issue is the development of a context of lithic scatters, which are common prehistoric resources within the park boundaries (Little, 1995). Another issue of historical archeological interest concerns the life of African-Americans before and after the battles and the Civil War (Little, 1995).

Map 3-3 List of Classified Structures

SYMBOL KEY

-  National Battlefield Park Boundary
-  National Battlefield Park Land
-  Unfinished Railroad Grade
-  Resources included in Manassas NBP's List of Classified Structures (LCS)
-  Non-NPS public land within park boundaries
-  Privately Held Land Within Park Boundaries
-  Privately Held Land Within Park Boundaries; NPS Owns Scenic Easement
-  Privately owned land outside park boundary



MUSEUM COLLECTIONS AND ARCHIVES

Original documents and historic artifacts relating to the First Battle of Manassas, the Second Battle of Manassas, and the families and farms impacted by these battles constitute the primary focus of the collection and material for museum exhibits housed in the Henry Hill Visitor Center and Second Manassas Visitor Contact Station. The collection also includes 40 cannon tubes displayed on reproduction carriages and distributed at battery sites throughout the park. These museum collections are used as part of the visitor center's and Visitor Contact Station's role as orientation points. The museum elements visible to the public are selected to match and enhance the other orientation displays at these facilities, and are also tied to the interpretive elements and cultural landscape of the battlefields themselves.

Less than one percent of the more than 165,000 objects in the park's growing museum collections are ever on exhibit. The remainder of these objects is kept in on- and off-site storage facilities. The bulk of the archeological and architectural material and furnishings is maintained at the Museum Resource Center, a regional storage facility in Landover, Maryland. Due to limited

on-site storage space at the Henry Hill Visitor Center, only the less bulky objects that directly support the park's primary interpretive themes and offer the greatest research value can be maintained at the park.

One full-time museum specialist is responsible for managing the park museum collections in accordance with established NPS standards. If needs are beyond the limits of training, experience, and available equipment and facilities, the museum specialist coordinates conservation measures with professional conservators. There is no dedicated space for conservation lab work, photography, or exhibit preparation. Additional space is currently maintained at Stuart's Hill for the storage and processing of archival materials in the collection.

The present on-site museum collections and archive facilities are nearing capacity. The anticipated growth of the collection will eventually necessitate more museum objects being stored off-site at the Museum Resources Center, as well as a need for additional space to accommodate museum records and electronic media. For the reasons listed above, this document will study Museum Collections and Archives in more detail.

TRANSPORTATION/TRAFFIC

ROADWAY CHARACTERISTICS

Manassas National Battlefield Park is just north of I-66, surrounding the intersection of U.S. Route 29 and VA Route 234. This location places the park within the heavily populated Washington, D.C. metropolitan area, and along a major transportation corridor that serves the increasingly developed hinterland of northern Virginia. U.S. Route 29 and VA Route 234 are two regional highways that run east west and north south, respectively, within the Manassas National Battlefield Park. Both of these roads are two lane facilities, except for U.S. Route 29, which becomes a multilane divided highway in the western portion of the park. The two highways meet at a signalized intersection in the center of the park. Currently these highways are used by park visitors, commuters, and other regional travelers.

As part of the Bypass Study, the Federal Highway Administration completed the Existing Conditions Report that details the transportation conditions of the park and surrounding area. This *General Management Plan/Environmental Impact Statement* is a programmatic study, and is therefore more general in nature. For more detailed information on roadway capacity and levels of service on the roadways and intersections in and adjacent to the park, please refer to the Bypass Study (FHWA, 2005). Map 3-4 shows the roads and trails in the Manassas National Battlefield Park.

TRAFFIC COUNTS AND LEVEL OF SERVICE

Traffic counts collected as part of the Bypass Study’s Existing Conditions Report indicate that U.S. Route 29 carries between 9,000 and 13,200 vehicles per day, and VA Route 234 carries between 9,800 and 14,100 vehicles per day (FHWA, 2002). The existing corridor levels of service and average daily traffic are shown in Table 3-1. While definitive data are

Table 3-1. Level of Services for U.S. Route 29 and Virginia Route 234 Corridors

Road Segment	Levels of Service		Average Daily Traffic
	AM	PM	
U.S. Route 29 East of VA Route 234	F	F	13,166
U.S. Route 29 West of VA Route 234	E	E	9,089
VA Route 234 North of U.S. Route 29	E	E	9,815
VA Route 234 South of U.S. Route 29	E	E	14,079

Source: Manassas National Battlefield Park Bypass Study Draft EIS (FHWA, 2005).

not available, anecdotal observations indicate that as much as 95 percent of this traffic volume is attributable to “through” trips—those that do not include a stop in the park itself.

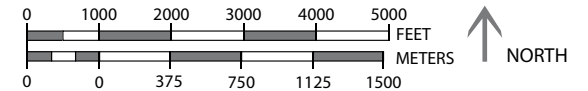
The traffic capacity analyses were performed by FHWA based on the procedures specified by the *Transportation Research Board special Report 209: Highway Capacity Manual, 1997*. Level of service is a qualitative rating of the effectiveness of a highway or highway facility in serving traffic, in terms of operating conditions. The *Highway Capacity Manual* identifies operating conditions ranging from A, for best operations (low volume and high speed) to F, for worst conditions. The Levels of Service used for signalized intersections in the Bypass Study are summarized below:

- LOS A describes operations with less than 10.0 seconds.
- LOS B describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle.
- LOS C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. Individual cycle failures (where all waiting vehicles do not clear the intersection during a single green time) may begin to appear at this level. This is generally considered the lower end of the range of the acceptable level of service in rural areas.

Map 3-4 Existing Circulation Facilities

Circulation Legend

- National Battlefield Park Boundary
- National Battlefield Park Land
- Parking Area
- Horse Trailer Parking Area
- Unfinished Railroad Grade
- Historic House Site
- Preserved war time structure
- Other historic site
- First Manassas Trail
- Second Manassas Trail
- Henry Hill Loop Trail
- Other Walking Trails
- Bridle Trails
- Non-NPS public land with park boundary
- Privately owned land within park boundary
- Privately owned land within park boundary; NPS owns scenic easement
- Privately owned land outside park boundary



- LOS D describes operation with delay in the range of 35.1 to 55.0 seconds per vehicle. Individual signal cycle failures are noticeable. This is generally considered the lower end of the range of acceptable levels of service in urban areas.
- LOS E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions (at capacity).
- LOS F describes operations with average delay in excess of 80.0 seconds per vehicle. There are many individual cycle failures. This LOS is considered to be unacceptable to most drivers.

The intersection of U.S. Route 29/VA Route 234 operates at Level of Service F during both the morning and evening peak hours. The intersection has a delay in excess of 80 seconds per vehicle, which is considered to be unacceptable to most drivers. The volume of commuters and other through traffic using routes within the park has become a serious detriment to the quality of the visitor experience the park can provide. The mix of pedestrian and vehicle traffic, as well as the mix of slower recreational traffic and higher speed through traffic also poses safety hazards for park visitors.

SAFETY

A transportation study for the park was completed in June 1996. This study found that most vehicular accidents within the park occur on U.S. Route 29 and VA Route 234, while relatively few accidents occur on other internal park roads. The accident rates on U.S. Route 29 and VA Route 234 are comparable to those of similar roads in Prince William County. The study also identified the signalized intersection at U.S. Route 29 and VA Route 234 as being problematic and a safety concern because the intersection is operating at capacity during the morning, noon, and evening peak travel periods. Erratic vehicular movement associated with the traffic congestion was cited as the primary safety concern (Peccia, 1996). Another safety concern is potential conflicts of pedestrians or bicyclists with the heavy vehicular traffic on U.S. Route 29 and VA Route 234. Presently, a number of the park's trails cross U.S. Route 29 and VA Route 234.

EMERGENCY RESPONSE

To respond to serious incidents, the National Park Service relies on local emergency services. Emergency response to Manassas National Battlefield Park is provided by local fire departments and emergency response facilities. The park is served primarily by Stonewall Jackson Volunteer Fire Department, Station 11, at 7814 Garner Drive in Manassas. The station is approximately 1.7 miles from the park's southern entrance on VA Route 234 and approximately 3 miles from the central area of the park—the intersection of U.S. Route 29 and VA Route 234. The response time to this location is approximately 5 minutes, but could be greater depending on traffic congestion on the roads. The station is equipped with ambulances and fire engines (Pomeroy 2003a).

The western end of the park is served by the Prince William County Gainesville District Volunteer Fire Department, Station 4, at 14450 John Marshall Highway (State Highway 55). The station is approximately 3 miles from the western entrance of the park on U.S. Route 29. The response time to the central area of the park is 7 to 12 minutes. The station is equipped with ambulances, fire trucks, and a rescue squad (Pomeroy, 2003b).

Emergency response may also be provided by the West Centreville Volunteer Fire Department Station 38, at 6001 O'Day Drive in Centreville. The station is approximately 3 miles from the eastern access on US Route 29. The station is equipped with ambulances and fire trucks.

The park falls within the jurisdiction of the National Capital Region Museum Emergency Response Team (MERT). This group, composed of experts in cultural resource management, is prepared to respond quickly to regional incidents, such as natural disasters or special events, which may threaten or endanger our museum collections, both cultural and natural, and associated historic structures and archeological sites.

SOCIOECONOMIC ENVIRONMENT

POPULATION

Due to the park's location in Prince William and Fairfax Counties and near Loudoun County, the local economic region is comprised of these counties plus Arlington County and the independent cities of Alexandria, Fairfax City, Falls Church, Manassas, and Manassas Park.

As of April 2000, Fairfax County's population was 969,749 (Census, 2000). Its population is now believed to have surpassed one million. From 1990 to 2000, Fairfax County's population increased by 18.5 percent. White individuals make up 69.9 percent of the population, followed by Asians at 13 percent, African American individuals at 8.6 percent, with American Indians and Native Hawaiians and Other Pacific Islanders making up the remaining 8.5 percent. Individuals 65 years old and over comprise 7.9 percent of the population.

Loudoun County's population increased by 96.8 percent from 1990 to 2000, and as of the 2000 census has a population of 169,599. White individuals make up 82.8 percent of the population, followed by African Americans at 6.9 percent, with Asians, American Indians, and Native Hawaiians and Other Pacific Islanders making up the remaining 10.3 percent. Individuals 65 years old and over comprise 5.6 percent of the population.

Prince William County's April 2000 population was 280,813. From 1990 to 2000, Prince William County's population increased by 30.6 percent. White individuals make up 68.9 percent of the population, followed by African Americans at 18.8 percent. American Indians, Asians, and Native Hawaiians and Other Pacific Islanders make up the remaining 12.3 percent. Individuals 65 years old and over comprise 4.8 percent of the population.

Based on the review of the Prince William County Geographic Information Systems information and aerial photography, there are approximately 70 to 75 residential homes that are within the park boundaries or that require

access through the park boundaries to access their property. The Bypass Study identified 37 private in-holdings in Prince William County and 17 private in-holdings in Fairfax County (FHWA, 2002). In addition to the in-holdings, which refer to privately owned properties that are either fully or partially located within the legislative boundaries of the park, there are approximately 20 additional private landowners that require use of state and U.S. routes in the park to access their properties.

ECONOMY³

In terms of earnings, the service sector of the economy is by far the most important for the local region and the state as a whole. The closer to Washington, D.C., the more important the federal government sector becomes to a city/county area. Between 1999 and 2000 median household income in Virginia increased by 4.3 percent to \$46,789. In Prince William County, income increased by 6.9 percent, to \$67,466, while Fairfax County income increased 8.1 percent to \$84,009.

The Trade, Transportation, and Utilities industrial category employed the largest portions of the state's workforce in 2000 at 18.5 percent. Government employed an additional 17.8 percent of the workforce, and professional and business services employed 16.2 percent.

EMPLOYMENT

The Arlington, Fairfax, Loudoun, and Prince William county area of northern Virginia contained nearly 25.6 percent of the state's workforce in 2000. One measure of an area's social and economic well-being is unemployment. This statistic measures the number of people that were available for work and yet were unable to find suitable work. In 2000, the unemployment rate for Virginia (2.7 percent) was below that of the country as a whole (3.7

³ Source for all data: the Virginia Employment Commission website: <http://velma.virtuallmi.com/>

percent). In addition, the unemployment rates for each of the political units that make up the local region ranged from 1.6 percent to 2.8 percent. For the affected area, the employment situation was better than it was for the country or state as a whole.

PER CAPITA INCOME

Personal income is a commonly used measure of the purchasing power available to the residents of a particular geopolitical unit. Prince William County together with Manassas and Manassas Park (average per capita income of \$29,967 in 2000) were somewhat behind the state average of \$31,120 and is slightly higher than the country as a whole (average per capita income of \$29,469). Bureau of Economic Analysis data show that for 2000—except for Prince William County, Manassas, and Manassas Park—the local area had per capita incomes ranging from \$40,290 to \$51,227, which is substantially better off than the rest of

the state and the nation in terms of per capita personal income.

POVERTY

The poverty rate is another measure of the economic and social well-being of an area. The percent of persons living below the poverty level within the affected area range from a low of 2.8 percent to a high of 7.8 percent. For each of the various parts of the affected area, the percentage of persons living below the official poverty level in 2000 was substantially lower than the state (9.6 percent) and national averages (12.4 percent).

Growing population, growth in industry earnings, relative high per capita incomes, and relative low unemployment and low poverty rates all indicate that the affected area has a vigorous and robust economy supporting a stable social environment.

RECREATION

Picnicking and hiking are available at the 400-acre Conway Robinson Memorial State Forest, which is 1/4 mile west of the park. In addition, there are numerous other parks and recreation facilities within the local area, which provide a wide variety of public recreational opportunities. The battles, location, historic resources, and historic significance of Manassas National Battlefield Park are what make it unique among the other parks and recreational areas of the affected region. The Henry Hill walking tour is the primary way

that visitors experience the First Battle of Manassas, while the park's driving tour is the primary way for people to experience the Second Battle. The park also features walking, hiking, and horseback riding facilities.

Bull Run Regional Park, operated by the Northern Virginia Regional Park Authority, is approximately four miles east of the Henry Hill Visitor Center. This facility features a broad range of recreational activities, and accommodates large groups' special events.

VISITOR EXPERIENCE

Resources available for visitor use include one visitor center, one visitor contact station, a picnic area, 5,071 acres of battlefield park, 12 miles of tour road, 150 interpretive park signs, 21 miles of hiking trails, and 23 miles of bridle trails.

VISITATION USE AND PATTERNS

The visitor use and patterns of use described in the following sections provides background for understanding levels of use and impacts of this use on the park’s resources. Visitor use data has been collected for many years.

Recreational visits for 2003 depicted in Table 3-2 are indicative of the normal park visitation patterns at Manassas National Battlefield Park. The park is open all year.

Visitation at most parks is usually seasonal with the lowest level of use in the winter and the highest in the summer. Spring and autumn are usually seasons of transition, with use going up in the spring and down in the fall. This typical pattern of use results in a “head and shoulders” diagram when plotted on a graph.

Month	Recreation Visits
January	20,033
February	24,609
March	82,093
April	146,231
May	93,407
June	50,962
July	54,314
August	118,450
September	64,394
October	36,462
November	36,457
December	32,541
Total	759,953

Source: National Park Service, Public Use Statistics Program Center, PSPC-WASO (www2.nature.nps.gov/stats/)

³ Non-recreation visits were reported as a constant 40 per month for an annual total of 480 non-recreational visits. These numbers, respectively, would be added to the monthly and yearly figures to obtain total visits for a particular month or the year.

Annual visitor use figures are presented in table 3-3. As this data shows, visitation patterns throughout the year at Manassas National Battlefield Park differ greatly from the typical pattern described above. Summer visitation is considerably higher than winter visitation. However, pleasant weather, combined with spring blossoms or autumn foliage, tends to create peak visitation during spring and fall weekends.

Annual visitor use at the park fluctuates from year to year. However, average visitation has increased 4.7 percent annually since 1983. As a general trend, visitation to the park is expected to continue to increase, although occasional annual declines in use may be expected.

VISITOR PROFILE

Three general categories of visitors at the Manassas National Battlefield Park are classified as follows:

- **General Visitors**—These people usually have limited specific interests in, or knowledge of, the battles and they visit the park to gain a general understanding of the park’s significance. These visitors usually spend less than two hours in the park, mostly at the visitor center and the Henry Hill area.
- **Historical Visitors**—These individuals have a good understanding of the overall significance of the battles, and they are looking to examine and understand the actions and details of the two battles. They will spend about five hours in the park touring the battle sites.
- **Recreational Visitors**—This group is comprised of persons seeking recreational experiences such as cross-country skiing, fishing, hiking, horseback riding, jogging, kite flying, nature study, picnicking, and sledding. They usually come to the park on spring, summer, and fall weekends and holidays.

AFFECTED ENVIRONMENT

As described above, the heaviest use of the park occurs during fall and spring weekends. At these times, local use increases dramatically. Seasonal variations are as follows:

- Spring—Heaviest use occurs on weekends and is usually concentrated around Stone Bridge and the visitor center and the surrounding area. Increased use by seniors and school groups occurs, as well as more use by hikers, joggers, and picnickers.
- Summer—Family groups on extended vacations dominate the park. Peak daily use occurs between the hours of 11:00 a.m. and 4:00 p.m. Again heaviest use is on the weekends.
- Fall—Senior citizen and organized tour use increases, especially in October. Use is concentrated on weekends. Area residents make increased use of the park for recreational activities.
- Winter—Visitation is the lightest of any season. Area residents and business commuters predominate during this period. Heaviest use occurs during periods of snowfall when cross-country skiing, sledding, and snow play are the main attractions.

PROJECTION OF FUTURE USE

A variety of factors affects park use. Forecasting visitor use is subject to a high probability of error because the method generally used is simplistic, relatively few data points are available to establish the trend, and there is no cause and effect relationship between past use, future use, and extraneous variables beyond the control of the National Park Service. In addition, the high levels of non-park vehicular traffic on U.S. Route 29 and VA Route 234 all but prohibit accurate counts of park-related traffic. Based on historical data, it is assumed that visitation would probably increase over the long term. This pattern also reflects the general trend for most national park system units.

Table 3-3: Annual Visitor Use, 1983 to 2003

Year	Recreation Visits ⁴	Non-Recreation Visits ⁵	Total Visits
2003	759,953	480	760,433
2002	779,147	480	779,627
2001	822,684	480	823,164
2000	692,006	480	692,486
1999	815,338	480	815,818
1998	972,709	480	973,189
1997	1,025,826	480	1,026,306
1996	725,086	480	725,566
1995	676,087	480	676,567
1994	917,534	480	918,014
1993	614,897	480	615,377
1992	867,606	480	868,086
1991	905,485	480	905,965
1990	799,972	480	800,452
1989	767,138	480	767,619
1988	778,861	420	779,281
1987	667,014	No data collected	667,014
1986	793,274	No data collected	793,274
1985	723,998	No data collected	723,998
1984	703,100	No data collected	703,100
1983	720,754	No data collected	720,754

Source: National Park Service, Public Use Statistics Program Center, PSPC-WASO (www2.nature.nps.gov/stats/)

⁴ Recreation Visits are the entries of persons, for any part of a day, onto lands or waters administered by the National Park Service for recreation purposes.

⁵ Non-recreation Visits are entries of persons going to and from in-holdings, trades people with business in the park, non-NPS personnel pursuing a gainful business (e.g., guides), and other non-NPS entries for purposes other than recreational pursuits.

PARK OPERATIONS AND MAINTENANCE

Manassas National Battlefield Park had a base operating budget of approximately \$2,526,500 in Fiscal Year 2004 and a permanent work force of 29 permanent positions and 9 seasonal positions. This work force was supplemented in 2004 by approximately 11,900 hours of Volunteers-in-Parks service. The park's base budget in FY 2004 was supplemented by approximately \$6,000 of donated funds and \$163,300 fee enhancement funds from entrance fees.

Management staff includes the superintendent, cultural and natural resources managers. Staff is organized into four operating divisions: Interpretation, Visitor Protection, Maintenance, and Administration. Staff expertise and specialties include one museum curator, one historian, one Natural Resource Program Manager/GIS Specialist, one computer specialist, and two exhibit specialists. This recurring staff will be supplemented and/or supported using special project funds, contracts, and/or the assistance or expertise of various NPS and other organizations as available.

Park administration structures include

- one visitor center
- one visitor contact station
- one central maintenance facility
- park headquarters
- one Law Enforcement office building
- one horse barn
- one hay barn/fire cache building
- one tack building
- one resource management building
- three employee housing units

In addition, the park includes 4.65 miles of paved and 7.6 miles of unpaved roadways and two picnic areas. The information on the park operations was obtained from the Annual Performance Plan for the Manassas National Battlefield Park, which may be obtained at <http://www.nps.gov/mana/administration/GPRA%202003/gpra2003.htm>.

Environmental Consequences



INTRODUCTION

The National Environmental Policy Act mandates that environmental impact statements disclose the potential environmental consequences of a proposed federal action. In this case, the proposed federal action would be the adoption of one of the alternatives described in this *General Management Plan/Environmental Impact Statement* for the Manassas National Battlefield Park. This chapter describes the potential impacts associated with three alternatives. By assessing the environmental consequences of all the alternatives on an equivalent basis, the National Park Service and other decision makers can decide which alternative creates the most desirable combination of beneficial results with the fewest adverse effects on the environment.

The environmental consequences associated with the proposed actions are analyzed on a qualitative level because of the general nature of the alternatives and proposed actions. Thus, this Environmental Impact Statement should be considered a programmatic analysis. Typically, future implementation proposals would be tiered (procedurally connected) to this broad scale *General Management Plan/Environmental Impact Statement*, and additional planning and environmental analysis would be conducted in accordance with the National Environmental Policy Act, NPS Director's Order 12, *NPS Management Policies 2001*, and other regulations. For this plan, this situation is especially true for the transportation improvements (controlled access measures) and cultural landscape rehabilitation (forest removal and revegetation) described under alternatives B and C. As a result, the analysis in this document is designed to provide the park superintendent with general management direction.

METHODOLOGY FOR ASSESSING IMPACTS

Potential impacts are described in terms of type (beneficial or adverse), context (site-specific, local, or even regional), direct versus

indirect, duration (short-term or long-term), and intensity (negligible, minor, moderate, or major). Provided below is a clarification of each of these concepts.

Impact Type

For each impact topic, the effects of the proposed action could be either adverse or beneficial. In some cases, the actions could result in both adverse and beneficial impacts for the same impact topic.

Intensity

This evaluation used the approach for defining intensity (or magnitude) for an impact as presented in Director's Order 12. Each impact was determined to be negligible, minor, moderate, or major. For each impact topic, the criteria defining the thresholds for each intensity level were determined. Most of the intensities are expressed qualitatively because this *General Management Plan/Environmental Impact Statement* is a programmatic document.

Context

The context of each impact is described in terms of site-specific, local, or regional. For instance, the construction of the new visitor center may have site-specific adverse impacts to terrestrial resources while the reduction in commuter traffic in the park would have localized benefits to the visitor experience.

Duration

The planning horizon for this *General Management Plan/Environmental Impact Statement* is approximately 20 years. In general, impacts that occur within one year or less were classified as short-term. Long-term effects would last for more than one year. Duration definitions are provided for each impact topic.

Direct Versus Indirect Impacts

Direct impacts are those caused by an action at the same time and place as the action. Indirect

impacts are reasonably foreseeable but occur later in time, at another place, or to another resource. An example of different impacts is how the removal of vegetation (direct impact) would in turn cause soil erosion and sedimentation, thus affecting the water quality (indirect impact) of a nearby waterway.

Impairment to Park Resources and Values

The National Park Service's *Management Policies 2001* require analysis of potential effects to determine whether actions would impair park resources. National Park Service managers must always seek ways to avoid or minimize to the greatest degree practicable, adversely impacting park resources and values. The laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not impair the affected resources and values.

Although Congress has given the National Park Service the management discretion to allow certain impacts, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. Any impact to any park resource or value could constitute an impairment. However, an impact would be more likely to constitute an impairment if it has a major or severe adverse effect upon a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- key to the natural or cultural integrity of the park
- identified as a goal in the park's general management plan or other relevant National Park Service planning documents

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on

impairment is made for most impact topics in this section.

Cumulative Impacts

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act, requires assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

Cumulative impacts are evaluated in a regional context, which varies for each impact topic. Cumulative effects were determined by combining the impacts of the proposed action with other past, present, and reasonable foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Therefore, it was necessary to identify other ongoing or foreseeable future projects at Manassas National Battlefield Park and, as necessary, the surrounding region.

CUMULATIVE IMPACT SCENARIO

As part of the analysis and consideration of potential cumulative impacts, other past, present, and reasonably foreseeable projects were identified. For each project, the National Park Service considered the potential cumulative effect when combined with the potential impacts of actions and management decisions proposed in the general management plan. A brief overview of other ongoing or past studies and pending projects identified in the immediate area follows. Projects that have the potential for cumulative effects are discussed further in the impact analysis.

Projects with Potential Cumulative Impacts

Manassas National Battlefield Park Bypass Environmental Impact Statement (Bypass Study)

U.S. Route 29 and VA Route 234 directly transect the Manassas National Battlefield Park. The volume of commuter traffic that uses these facilities has resulted in traffic safety and congestion problems, negative impacts to visitor experience, and problems for basic park operations. In response to the conflicting uses of roads within the park, Congress passed the Manassas National Battlefield Park Amendments of 1988, requiring the study of alternatives to the current situation.

That legislation served as the impetus for the Bypass Study described in the “Purpose and Need” section. The Bypass Study analyzes the impacts of relocating both U.S. Route 29 and VA Route 234 from their current locations within the park, and includes analysis of all elements necessary leading to the preparation of an Environmental Impact Statement, including traffic modeling and evaluations, cultural resource evaluations, socioeconomic evaluations, natural resource evaluations, and alternatives development. Further information can be found on this project at <http://www.battlefieldbypass.com>.

I-66 Multimodal Transportation and Environmental Study (I-66 Study)

Interstate 66 runs east west through northern Virginia and is immediately south of Manassas National Battlefield Park. The Virginia Department of Transportation and the Department of Rail and Public Transportation have initiated the I-66 Study for improving mobility along the I-66 corridor from just west of the I-66/I-495 (Capital Beltway) interchange in Fairfax County to the I-66/U.S. Route 15 interchange near Haymarket in Prince William County. An earlier Major Investment Study selected multimodal transportation improvements in the I-66 corridor as ways to enhance safety while providing increased capacity for current and projected future travel demands.

The current I-66 Study will examine configurations and locations of improvements to the I-66 travel lanes; Metrorail; commuter and local bus service, transit stations and parking; and other facilities. The Federal Highway Administration and the Federal Transit Administration, acting as joint lead federal agencies, are working with the Virginia Department of Transportation and the Virginia Department of Rail and Public Transportation to prepare an Environmental Impact Statement as required by and in accordance with the National Environmental Policy Act. Further information on this project can be found at <http://www.infoi66.com>.

Tri-County Parkway Location Study & Environmental Impact Statement (Tri-County Parkway Study)

The Virginia Department of Transportation has completed a Draft Environmental Impact Statement and Location Study for a new roadway, referred to as the Tri-County Parkway. The Virginia Department of Transportation started this study in 2002 to evaluate a new north/south transportation link in Northern Virginia to connect the City of Manassas with I-66 and the Loudoun County Parkway in the Dulles area.

The Draft Environmental Impact Statement moves forward alternatives adjacent to and on the east and the west sides of the park. Park staff and the staff at the Virginia Department of Transportation have worked closely together on this study and the park bypass study. Thus, whether the Virginia Department of Transportation selects the route to the east or to the west, its facility and the park bypass route likely would be co-located in the same roadway, rather than in redundant roadways.

The Virginia Department of Transportation and Federal Highway Administration initiated this study at the request of Fairfax, Loudoun, and Prince William Counties. Further information on this project can be found at <http://www.virginiadot.org/projects/const-project.asp?ID=236>.

Virginia Route 234 Bypass North

During the 1990s, the Virginia Department of Transportation conducted a study to plan the alignment and construction of a bypass for VA Route 234 around the city of Manassas. The proposed route would run west of the park, rejoining VA Route 234 north of the park at Catharpin. During preparation of the EIS for this project, budgetary and other concerns forced VDOT to cease work on the northern portion of the route, and to construct only the portion south of I-66. The resumption of the northern portion of the VA Route 234 bypass is a matter of continued discussion and planning.

Stuart's Hill Tract Rehabilitation and Picnic Area Construction

The Stuart's Hill Tract rehabilitation and picnic area construction project was a

collaborative effort between the National Park Service and the Smithsonian Institution. The Stuart's Hill Tract was acquired in 1988 by the National Park Service. Part of that tract included an area where a private developer had begun alterations for a mixed-use community that drastically altered the landscape. Alterations included the establishment of an entrance road, re-contouring of the area, and establishment of a drainage network.

The Stuart's Hill Tract rehabilitation project entailed returning previously disturbed areas to their historic grades, creating wetlands, replanting native vegetation, and developing a new picnic facility and area. The wetland creation part of the project served as compensatory wetland mitigation for the Smithsonian Institution, for wetland impacts associated with the National Air and Space Museum's Udvar-Hazy Center project.

IMPACTS ON THE NATURAL ENVIRONMENT

AIR QUALITY

Methodology

In the impact assessment for air quality the National Park Service study team focused on changes to the levels of air emission from the proposed actions under each alternative. The National Park Service also considered the physical impacts associated with any new developmental plans and anticipated visitor uses. The context of the evaluation was the Park and immediate surrounding area. For this programmatic study, the impacts discussed are qualitative. The potential impacts on the National Ambient Air Quality Standards and other impacts outside the park associated with the closure of U.S. Route 29 and VA Route 234 to commuter and commercial traffic are included in the Bypass Study described above. For the purposes of this document, it is estimated that more than 95 percent of the park's traffic volume is attributable to "through" trips—those that do not include a stop in the park itself.

Definition of Intensity Levels

Analyses of the potential intensity levels of impacts resulting from each alternative on air quality were derived from the information available from Prince William County and regional agencies in northern Virginia. Definitions for the thresholds of change for the intensity of impacts on air quality are as follows:

- *Negligible:* The impact is localized and not measurable or at the lowest level of detection.
- *Minor:* The impact is localized and slight but detectable. The impact would have no effect on the County's ability to comply with National Ambient Air Quality Standards.
- *Moderate:* The impact is readily apparent and appreciable. The impact could have an effect in the area on the County's ability to comply with National Ambient Air Quality Standards.
- *Major:* The impact is severely adverse and highly noticeable. The impact would have an effect on

the County's ability to comply with National Ambient Air Quality Standards.

- *Duration:* A short-term impact would last less than one year and would affect only one season's use by visitors or the length of construction activities. A long-term impact would last more than one year and would be more permanent in nature.

Alternative A—Continuing Current Management Practices (No-Action)

Under the no-action alternative, there would be no change in the region's levels of emission from vehicular traffic at the Manassas National Battlefield Park or surrounding area. The no-action alternative would not change the County's ability to comply with the National Ambient Air Quality Standards. Local impacts on air quality presently exist from emissions generated during rush hours from traffic congestion at the intersection of U.S. Route 29 and VA Route 234. Over time, the local emission levels would expect to increase; however, levels would increase only slightly because the intersection is at or near its operational capacity. These existing conditions have a localized, adverse impact on air quality in the park. The impact is long-term and negligible.

Cumulative Impacts. A number of past, present, and pending road and other construction projects in close vicinity have the potential to have short-term, adverse impacts on air quality from fugitive dust and emissions during construction. In the long term, the air quality impacts are dependent on the final route selection and designs for each project. However, for the purposes of evaluating the cumulative impact scenario, it is assumed that there would be a negligible impact on air quality in the vicinity of the Manassas National Battlefield Park because traffic is only being rerouted from U.S. Route 29, VA Route 234, and other roads, and there would be lower emissions generated from delays at intersections.

The incremental impact associated with implementation of alternative A would be expected to be small. The increased emissions levels under alternative A, when combined with other past, present, and reasonably foreseeable future projects such as pending road construction projects, would be expected to have a moderate short-term adverse cumulative impact on air quality in the vicinity of the Manassas National Battlefield Park.

Conclusion. Negligible, long-term, adverse impacts on air quality would continue along the VA Route 234 and U.S. Route 29 corridors. Adverse cumulative impacts would be moderate; however, the incremental contribution of Alternate A would be small. Because there would be no major adverse impact to resources or values, there would be no impairment of the Park's resources or values.

Alternative B—The Two Battles Of Manassas (Preferred Alternative)

The upgrade of the Second Manassas Visitor Contact Station at Stuart's Hill and other small construction-related activities associated with improving visitor services under alternative B would have a localized adverse impact on air quality as a result of fugitive dust, particulates, and emissions produced by construction equipment. Some fugitive dust, particulates, and emissions produced by construction equipment would still be in the air to some degree despite the mitigation measures of using low polluting fuel and having pollution control devices installed on the construction equipment. The adverse impact would be short-term and negligible because the projects are small in nature and best management practices (such as watering, seeding for erosion control, etc.) would be implemented to reduce construction-related impacts.

Closure of roads through the park to heavy commuter traffic would improve local air quality along those road corridors within the park. Rerouted traffic would contribute to emissions along roads outside of the park. Emissions outside of park boundaries are considered as part of the Bypass Study.

The redistribution of vehicular traffic would not be expected to have an adverse impact on the County's ability to comply with National Ambient Air Quality Standards; therefore, the adverse impacts to air quality in the region would be expected to be minor and long-term. The magnitude of impacts on air quality outside the park resulting from redistributing the commuter and commercial traffic outside the park is being evaluated as part of the Bypass Study, but this impact on air quality is anticipated to be minor, long-term, and adverse.

There would be a localized and short-term decrease in air quality as a result of fugitive dust, particulates, and emissions produced by construction equipment. This impact would be minor because the amount of disturbed area at any given time would be relatively small. Forest removal operations are expected to be conducted in phases, which would limit the amount and extent of construction activity occurring at any one time.

Cumulative Impacts. The construction-related activities and forest removal operations under alternative B, when combined with other past, present, and reasonably foreseeable future projects such as Manassas National Battlefield Park Bypass, I-66 Improvements, and Tri-County Parkway, would have an adverse cumulative impact on air quality. Traffic congestion and fugitive dust during construction would add to the localized and short-term impact on air quality. The incremental impact associated with implementation of any of the proposed activities under alternative B would be expected to be small and would not have a noticeable contribution to the cumulative impact.

The magnitude of the impact on air quality resulting from the other road improvement projects and redistribution of commuter and commercial traffic outside the park is being evaluated in more detail as part of the Bypass Study and the Tri-County Parkway Study. The cumulative impact is dependent on the final route selection which, at the time this report was written has not been finalized. However,

the impact is likely to be minor, long-term and adverse; therefore, the overall cumulative impact would likely be minor.

Conclusion. Negligible short-term adverse impacts to air quality in the park would occur periodically during construction activities. In the long term, there would be a localized reduction in traffic-related air pollutants along the portions of U.S. Route 29 and VA Route 234 within the park. The magnitude of impacts on air quality resulting from redistributing the commuter and commercial traffic outside the park is being evaluated as part of the ongoing Bypass Study. However, this impact is anticipated to be adverse and minor. Cumulative impact on air quality would be adverse and minor.

Additional mitigation measures could further minimize the construction-related short-term impacts to air quality. Such measures could include (but are not limited to) dust control, pollution control devices on construction equipment, and the use of low polluting fuels.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

Alternative C—The Defining Moments of the Battles of Manassas

Relocating the visitor center off of Henry Hill to a new location to the east of Stone Bridge would have similar construction-related impacts to that of alternative B except the footprint and magnitude of construction would be larger. Fugitive dust, particulates, and emissions produced by construction equipment would have short-term minor adverse impacts on air quality. In the long term, the new visitor center and other

improvements proposed under alternative C would have no to negligible adverse impacts on air quality because the projects are small in nature and best management practices (such as watering, seeding for erosion control, etc.) would be implemented to reduce construction-related impacts.

Closure of roads through the park to heavy commuter traffic would improve local air quality along those road corridors within the park. Rerouted traffic would contribute to emissions along roads outside of the park, which is being considered as part of the Bypass Study. The redistribution of vehicular traffic would not be expected to have an adverse impact on the County's ability to comply with National Ambient Air Quality Standards; therefore, the adverse impacts to air quality in the region would be expected to be minor and long-term.

The type of impacts would be similar to those described under alternative B, although the extent of construction and forest removal operations would be smaller. There would be a localized short-term decrease in air quality as a result of dust, particulates, and emissions produced by construction equipment. This impact would be negligible because the disturbed area would be relatively small. Forest removal operations are expected to be done in phases, which would limit the amount and extent of construction activities occurring at any one time.

Cumulative Impacts. The cumulative impacts would be the same as described for alternative B. The construction-related activities and forest removal operations under alternative C, when combined with other past, present, and reasonably foreseeable future projects such as Manassas National Battlefield Park Bypass, I-66 Improvements, and Tri-County Parkway, would have an adverse cumulative impact on air quality. Traffic congestion and fugitive dust during construction would add to the localized and short-term impacts on air quality. The incremental impact associated with implementation of any of the proposed activities under alternative C would be expected to be small and would not have a

noticeable contribution to the cumulative impact.

The magnitude of impacts on air quality resulting from the other road improvement projects and redistributing the commuter and commercial traffic outside the park is being evaluated in more detail as part of the Bypass Study and the Tri-County Parkway Study. The cumulative impact is dependent on the final route selection which, at the time this report was written has not been finalized. However, the impact is likely to be minor, long-term and adverse; therefore, the overall cumulative impact would likely be minor.

Conclusion. Impacts to local air quality during construction activity, would range from negligible to minor, and would be short-term and adverse. Closure of U.S. Route 29 and VA Route 234 to commuter and commercial traffic would result in a localized reduction in vehicle-related air pollutants along the portions of these routes that fall within park boundaries. The result would be a long-term, beneficial impact to air quality within the park. The potential effects of rerouting traffic from the road closures are discussed in more detail in the Bypass Study.

Additional mitigation measures could further minimize the construction-related short-term impacts to air quality. Such measures could include (but are not limited to) dust control, pollution control devices on construction equipment, and the use of low polluting fuels.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

SOUNDSCAPE

Methodology

The National Park Service *Management Policies 2001* states that the National Park Service will strive to preserve the natural quiet and natural sounds associated with the physical and biological resources of parks. Section 4.9 of *NPS Management Policies 2001* requires the rehabilitation of degraded soundscapes to the natural condition whenever possible, and the protection of natural soundscapes from degradation due to noise (undesirable human-caused sound). The National Park Service is specifically directed to "take action to prevent or minimize all noise that, through frequency, magnitude, or duration, adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified as being acceptable to, or appropriate for, visitor uses at the sites being monitored" (*Management Policies 2001*, sec. 4.9).

Noise can adversely affect park resources by modifying or intruding upon the natural soundscape, and can also indirectly impact resources by interfering with sounds important for animal communication, navigation, mating, nurturing, predation, and foraging functions. Noise can also adversely impact park visitor experiences by intruding upon or disrupting experiences of solitude, serenity, tranquility, contemplation, or a completely natural or historical environment. The methodology used to assess noise impacts in this document is consistent with *NPS Management Policies 2001* and Director's Order 47, "Soundscape Preservation and Noise Management."

Definition of Intensity Levels

Analyses of the potential intensity levels of impacts on soundscape management were derived from the available literature on the Manassas National Battlefield Park. The thresholds of change for the intensity of impacts on soundscape are defined as follows:

- *Negligible:* Effects on the natural sound environment would be at or below the level of

detection and such changes would be so slight that they would not be of any measurable or perceptible consequence to the visitor experience or to biological resources.

- *Minor:* Effects on the natural sound environment would be detectable, although the effects would be localized, and would be small and of little consequence to the visitor experience or to biological resources.
- *Moderate:* Effects on the natural sound environment would be readily detectable and localized, with consequences to the visitor experience or to biological resources at the regional level.
- *Major:* Effects on the natural sound environment would be obvious and would have substantial consequences to the visitor experience or to biological resources in the region.
- *Duration:* A short-term impact would last less than one year and would affect only one season's use by visitors or the length of construction activities. A long-term impact would last more than one year and would be more permanent in nature.

Alternative A—Continuing Current Management Practices (No-Action)

Under the no-action alternative, U.S. Route 29 and VA 234 would remain open to commuter and commercial traffic throughout the park. The battlefield and historic resources along U.S. Route 29 and VA Route 234 would continue to be adversely affected from noise generated from vehicular traffic. When noise levels were compared to land-use compatibility guidelines, the noise levels were found to be above the generally accepted threshold for cultural activities and city parks. The desired soundscape of a battlefield setting is a tranquil, peaceful, and still setting. This setting is desired to allow the visitor to imagine the series of historical events that took place on the battlefield. The noise from vehicular traffic compromises this setting and the visitor experience. Over the next 20 years, this condition and noise level may worsen as traffic levels on I-66, U.S. Route 29, and VA Route 234 increase. Therefore, the no-action alternative would have a moderate long-term adverse impact on the park's soundscape.

Cumulative Impacts. Other past, present, and reasonably foreseeable future projects, such as the proposed road projects described in the cumulative impact scenario, would have short-term, adverse impacts on the soundscape from construction activities and long-term, adverse impacts from noise generated by vehicles on the new roads. When these noise impacts are combined with the noise impacts from vehicular traffic at the park, the cumulative adverse impact would be long-term, moderate, and adverse. If the roads were not closed to local commuter traffic, as is the case under alternative A, the Manassas National Battlefield Bypass and other regional road project would be expected to displace some of the traffic on U.S. Route 29 and VA Route 234 to other roads. This displacement would lessen traffic in some areas, but would not reduce traffic levels on the park roads to the extent that noise would be reduced to acceptable levels. Therefore, the noise generated from traffic would be expected to continue if the National Park Service did not restrict use of the roads. The overall cumulative impact to noise would be expected to be moderate, with the no-action alternative incremental contribution being moderate. However, the degree of the impact is dependent on the outcome of each road project.

Conclusion. Noise generated from traffic on U.S. Route 29 and VA Route 234 during peak travel periods would continue to have a moderate, long-term, adverse impact on the park's soundscape. A moderate long-term adverse cumulative impact would occur. Because there would be no major adverse impact to resources or values, there would be no impairment of the park's resources or values.

Alternative B—The Two Battles of Manassas (Preferred Alternative)

The upgrade of the Second Manassas visitor contact station at Stuart's Hill and other small construction-related activities associated with improving visitor services under alternative B would have a localized, adverse impact on the soundscape caused by noise generated by construction equipment and activities. The

adverse impact would be short-term and negligible. Long-term, adverse impacts on the soundscape from the new contact station and other small projects would be negligible because park visitation, visitor patterns, and use would not increase to a point that would have a noticeable effect on the soundscape.

Under alternative B, the National Park Service would control access would restrict commuter and commercial traffic on U.S. Route 29 and VA Route 234. The controlled access would greatly lower the traffic volumes on the roads. In addition, speed limits within the park would be reduced to 25 miles per hour. As a result, noise levels generated from vehicular and truck traffic would also be reduced.

The controlled access and reduced speeds would help achieve the desired soundscape of the park. The desired soundscape of a battlefield is a tranquil, still, and peaceful setting where visitors can imagine the series of historical events that took place on the battlefield. Thus, the road closures and reduced speeds would have a moderate long-term beneficial impact on the soundscape of the park. Controlled access and the diversion of vehicles around the park would have an adverse impact on noise (likely to be moderate); however, the intensity of the impact is dependent on the route selected. Noise associated impacts outside the park are being considered as part of the environmental review for the Bypass Study.

There would be an adverse localized and short-term impact on the soundscape caused by noise generated during forest removal operations. This impact would be minor because the length of construction and noise generated would be relatively small. Forest removal operations would be performed in phases, which would limit the amount and extent of construction activity occurring at any one time.

Cumulative Impacts. Other past, present, and reasonably foreseeable future projects such as the road projects described in the cumulative impact scenario would have short-term adverse impacts on the soundscape from

construction activities. When these impacts are combined with the construction related impacts of alternative B, the cumulative adverse impact would be short term and minor. In the long term, the impact of alternative B on soundscape would be relatively beneficial because of the reduction in noise resulting from the decrease in vehicular traffic in the park. No long-term cumulative impacts on the soundscape would occur because alternative B would have no long-term adverse impacts on the soundscape and because no long-term impacts were identified in the cumulative impact scenario.

Conclusion. Controlled access and reduced speed limits within the park would have a moderate, long term, beneficial impact on the soundscape. Minor short-term adverse impacts on the soundscape would occur during construction activities to upgrade visitor services areas and during forest removal operations. Minor short-term cumulative impacts on the soundscape would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

Alternative C—The Defining Moments of the Battles of Manassas

Relocating the visitor center off of Henry Hill to a new location to the east of Stone Bridge would help rehabilitate the soundscape of the battlefield resource at Henry Hill and would introduce a new noise source at another location in the park. Additional study for the relocation of the visitor center would take into consideration the potential noise impacts to other nearby resources. Construction activities associated with building a new visitor center would have minor, short-term, adverse

impacts on the soundscape. In the long term, the new visitor center and other improvements proposed under alternative C would improve the soundscape on the battlefield by removing the visitor center from the battlefield. By relocating visitor-related sounds to an area of the park removed from the major sites of battle, the activities under alternative C would be more compatible and desirable based on the park's purpose to preserve the story of the two Battles of Manassas. Therefore, a minor long-term beneficial impact would occur on the park's soundscape.

Under alternative C, the National Park Service would control access on U.S. Route 29 and VA Route 234 and restrict commuter and commercial traffic. The controlled access would greatly lower the traffic volumes on the roads within the park. In addition, speed limits within the park would be reduced. As a result, noise levels generated from vehicular and truck traffic would also be reduced. The controlled access and reduced speeds would help achieve the desired soundscape of the park. The desired soundscape of a battlefield setting is a tranquil, still, and peaceful setting where visitors can imagine the series of historical events that took place on the battlefield. Thus, the road closures and reduced speeds would have a moderate long-term beneficial impact on the soundscape.

Impacts would be similar to those described under alternative B, although the extent of construction and forest removal operations would be smaller. There would be a localized short-term impacts on the soundscape caused during the forest removal. This impact would be negligible because the length of construction and noise generated would be relatively small. Forest removal operations would be performed in phases, limiting the amount and extent of construction activities occurring at any one time.

Cumulative Impacts. The cumulative impact would be the same as described for alternative B. Other past, present, and reasonably foreseeable future projects such as the road projects described in the cumulative impact scenario would have short-term adverse

impacts on the soundscape from construction activities. When these impacts are combined with the construction related impacts of alternative C, the cumulative adverse impact would be short-term and minor. In the long term, the impact of alternative C on soundscape would be beneficial due to the reduced noise resulting from decreased vehicular traffic in the park. No long-term impacts to the soundscape were identified in the cumulative impact scenario; therefore, no long-term cumulative impacts on the soundscape would occur.

Conclusion. Controlled access and reduced speed limits within the park would have a moderate, long-term, beneficial impact on the soundscape. Minor short-term adverse impacts on the soundscape would occur during construction activities to upgrade the visitor services areas and forest removal operations. Minor short-term cumulative impacts on noise would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

VEGETATION AND WILDLIFE

Methodology

In the impact assessment for vegetation and wildlife, the National Park Service focused on changes to the levels of populations of species and the effects on habitat and natural communities. The National Park Service also considered the physical impacts associated with any new developmental plans and anticipated visitor uses. The context of the evaluation was the park and surrounding area. For this programmatic study, the impacts discussed are qualitative and, in most cases,

additional planning and environmental analysis would be conducted to determine site-specific impacts on vegetation and wildlife.

Definition of Intensity Levels

Analyses of the potential intensity of impacts to vegetation and wildlife were derived from the available literature on the Manassas National Battlefield Park and professional judgment of the park staff. The thresholds of change for the intensity of impacts on vegetation and wildlife are defined as follows:

- For vegetation:
 - *Negligible*: individual native plants may occasionally be affected, but no measurable or perceptible changes in plant community size, type, integrity, or continuity would occur.
 - *Minor*: impacts on native plants are measurable or perceptible and localized within a relatively small area. The overall viability of the plant community would not be affected and, if left alone, would recover.
 - *Moderate*: impacts on native plants would cause a change in the plant community (e.g., abundance, distribution, quantity, or quality); however, the impact would remain localized.
 - *Major*: impacts on native plant communities would be substantial and highly noticeable, and would affect a sizable portion of affected community type in or outside the park. Mitigation measures required to offset the adverse effects would be extensive and their success would not be guaranteed.

For wildlife:

- *Negligible*: wildlife and habitats would not be affected or the effects would be at or below the level of detection, and the changes would be so slight that there would not be any measurable or perceptible consequence to the wildlife species populations.
- *Minor*: impacts on wildlife and habitats would be detectable, although the effects would likely be localized, small, and of little consequence to the species' population. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
- *Moderate*: impacts on wildlife and habitats would be readily detectable and localized, with

consequences at the population level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.

- *Major*: impacts on wildlife and habitats would be obvious and would have substantial consequences to wildlife populations in the region. Extensive mitigation measures may be needed to offset adverse effects.
- *Duration*: A short-term impact would last less than one year and would affect only one season's use by visitors or the length of construction activities. A long-term impact would last more than one year and would be more permanent in nature.

Alternative A—Continuing Current Management Practices (No-Action)

Under the no-action alternative, the National Park Service would continue with current management practices, including the present use of the facilities. Controlled access into the park would not be implemented. The visitor center and contact station would not change. The National Park Service would conduct small-scale, periodic clearing activities to maintain the battlefield landscape. Clearing would be achieved using a variety of potential methods, including mechanical methods as well as prescribed fire. These small-scale activities would have little effect on plant populations in the park because the areas affected would be small. The activities would not displace or alter habitat in a way that affects wildlife populations because the park would avoid such areas; therefore, negligible adverse impacts on vegetation and wildlife would occur.

Cumulative Impacts. The small clearing activities under alternative A, when combined with other past, present, and reasonably foreseeable future projects such as pending road construction projects, would have a moderate adverse cumulative impact on vegetation and wildlife. The pending road projects have the potential to have moderate impacts on vegetation and wildlife; however, the degree of the impact is dependent on the final route selection for each project. The incremental impact associated with

implementation of alternative A would be small. Overall, the cumulative impact would be moderate, long term, and adverse.

Conclusion. Negligible adverse impacts on vegetation and wildlife would occur. A moderate adverse cumulative impact could occur; however, the incremental impact associated with alternative A would be small. Because there would be no major adverse impact to resources or values, there would be no impairment of the park's resources or values.

Alternative B—The Two Battles of Manassas (Preferred Alternative)

The upgrade of the Second Manassas Visitor Contact Station, as well as potential improvement and expansion of the access road and parking area, would have minor short-term and long-term adverse impact on vegetation and wildlife. Upgrade of the access road and associated parking for the Second Manassas Visitor Contact Station could require some tree removal and some wildlife may be temporarily displaced by construction activities. Additional environmental evaluations and field studies would be required for implementation. The impact on vegetation and wildlife would be adverse and minor due to the potential removal of vegetation to upgrade the road and parking. The National Park Service would practice avoidance and minimization to the extent practicable during the planning and design and then develop appropriate mitigation to minimize impacts.

The closure of U.S. Route 29 and VA Route 234 to heavy commuter traffic would have a beneficial impact on the wildlife in the park. The reduction in vehicular and truck traffic through the park would reduce the noise and human activity that discourages wildlife use near the road. Travel speeds would also be reduced throughout the park. With the reduction of traffic and travel speeds, the number of animals killed by vehicles would likely be reduced. A minor long-term beneficial impact would occur on wildlife within the park.

Diversion of traffic and changes in traffic levels on other roads outside the park are being considered in the Bypass Study. At the time of this evaluation, the potential effects on wildlife of closing the roads outside the park are uncertain, because many unknown variables that need to be considered, such as location and design of the bypass, surrounding habitat, and wildlife migration patterns and populations. However, as a result of changes to traffic flows and levels, potential adverse impacts to wildlife would likely range from negligible to minor.

Rehabilitation of portions of the historic landscape would result in the phased removal of approximately 327 acres of second growth forest, which would be converted to open fields. Map 4-1 shows the extent of proposed forest removal. Most of this acreage consists of oak-hickory or Virginia pine forest with a small portion of loblolly white pine, and mixed forest. Approximately 82 acres of open fields would be allowed to regenerate through natural succession back to oak-hickory forest. In the long term, there would be a net loss of 245 acres of forest. The clearings will be maintained using a variety of potential methods, including mechanical methods as well as prescribed fire. These acreages are estimates and are presented for comparison of the alternatives only. The cleared forestland would be converted to early successional habitats such as grassland and/or scrubland.

Various studies support the finding that grasslands are declining at higher rates than forested lands. In Virginia, open, idle grasslands have been reduced by 55% since 1945 (Franzreb, K. E. and K. V. Rosenberg, 1997). The conversion to grassland would thereby help to offset the impacts of forest removal. While the impacts of this removal would be noticeable within the park itself, the regional value of the newly created grasslands would be such that the overall regional impacts to vegetation and wildlife would be minor.

Historic landscape modification would benefit some species of migratory birds and negatively affect others. The approximately 327 acres of forested habitat to be removed represents

some 15 percent of the forested habitat within the park. The *net* loss of 245 forested acres represents approximately 11 percent of the park's total forested acreage. This newly cleared land would be managed as open fields. This would create additional habitat for species that prefer open fields or edge habitat between forests and fields, including the prairie warbler, field sparrow, mice, voles, hawks, and other species.

The 82 acres of open field allowed to return to woodlands would expand the park's existing woodlands and provide habitat for woodland species such as squirrels, woodpeckers, and raccoons. Species that use edge habitat between forests and fields would also benefit. In the short-term, this regenerating habitat would favor early successional species. As tree regeneration begins to dominate the sites, birds such as the yellow-breasted chat, common yellowthroat, indigo bunting, and prairie warbler would likely occupy the sites. With canopy closure and development of more mature stands, canopy nesters such as eastern wood-pewees would likely occur. The relatively small size of the regeneration areas would minimally expand the existing woodlands, which may not appreciably enhance breeding habitat for area sensitive forest interior birds.

The net loss of forests would nonetheless impact interior forest area-sensitive species, whose populations would likely decrease or be displaced through direct loss of forest habitat, increase in edge habitat, and increase in edge effects. There could be increased competition with edge species for food, nest sites, and space. An increase in the proportion of edge to forest interior is likely to lead to higher nest parasitism and nest predation. Nests along forest edges and in small forest tracts experience higher rates of loss from foxes, raccoons, cats, dogs, blue jays, and other predators.

Although these acreages are representative of the magnitude of change expected, some further refinement of the actual boundaries of the historic scene rehabilitation areas would likely occur based on more precise field

surveys. The National Park Service would conduct additional environmental analysis and documentation prior to proceeding with implementation in each resource area. Bottomland forests and riparian vegetation within the perimeters of designated cut areas would be maintained, which would minimize the impacts on bird and other species that use this habitat.

Cumulative Impacts. When combined with other past, present, and reasonably foreseeable future projects, the construction-related activities under alternative B would have a short-term adverse cumulative impact on vegetation and wildlife. The incremental impacts associated with alternative B would be small. The Manassas National Battlefield Park Bypass, Tri-County Parkway, and other nearby road projects have the potential to have adverse impacts on forested areas and associated wildlife because of clearing and construction activities to build the new roads. Collectively the cumulative impact would be anticipated to be moderate, long-term, and adverse.

Conclusion. There would be an approximately 15 percent net decrease in the overall woodlands and a 12 percent net increase in open fields or grassland within the park. Overall, the reduction of woodlands by mechanical methods or with prescribed fire would have a minor change in the area of vegetative or wildlife communities within the park as a whole; however, based on the anticipated acreage of woodland cleared, minor short-term adverse impacts would occur from the disruption of the habitat. The reduction of woodlands is necessary to rehabilitate the battlefield landscape, giving visitors a more direct visual understanding of the progression of the battle action. The change in vegetation communities would primarily benefit wildlife species that prefer open or edge habitats. A moderate long-term adverse cumulative impact would occur on vegetation and wildlife.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific

purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

Alternative C—The Defining Moments of the Battles of Manassas

The construction of a new visitor center to the east of Stone Bridge would have adverse impacts on vegetation and wildlife. In general, the new visitor center and associated access road and bridge would require the destruction of wildlife habitat, removal of vegetation, and displacement of wildlife species. The degree of the impact is dependent on the future location of the visitor center, road, and bridge; however, there is no location along the Bull Run stream valley where total avoidance of impacts to forested areas and wildlife habitat could occur. A moderate long-term adverse impact is likely.

The National Park Service would practice avoidance and minimization to the extent feasible during planning and design to develop appropriate mitigation to minimize impacts. Prior to implementation, the National Park Service would assess the potential impacts and evaluate the potential alternatives in accordance with the National Environmental Policy Act, Director's Order's 12, and NPS *Management Policies 2001*. Removal of the Henry Hill Visitor Center would allow rehabilitation of that area, most likely to open fields that would reflect the historic landscape.

The closure of U.S. Route 29 and VA Route 234 to heavy commuter traffic would have a beneficial impact on the wildlife at the park. The reduction in vehicular and truck traffic through the park would reduce the noise and human activity that discourages wildlife use near the road. Travel speeds would also be reduced throughout the park. With the reduction of traffic and travel speeds, the number of animals killed by vehicles would

likely be reduced. A minor long-term beneficial impact would occur on wildlife.

Creation of view corridors would result in the removal of approximately 72 acres of second growth forest to be converted into open fields. Map 4-1 shows the areas of forest removal. These acreages are estimates and are presented for comparison of the alternatives only. Bottomland forests and riparian vegetation within the perimeters of designated cut areas would be maintained. Acreage rehabilitated to open fields would provide habitat for mice, voles, hawks, deer, foxes, or other species that prefer open fields or edge habitat between forests and fields. The clearings will be maintained using a variety of potential methods, including mechanical methods as well as prescribed fire.

The removal of forest would have a minor short-term adverse impact on vegetation and wildlife. Various studies support the finding that grasslands are declining at higher rates than forested lands. In Virginia, open, idle grasslands have been reduced by 55% since 1945 (Franzreb, K. E. and K. V. Rosenberg, 1997). The conversion from forest to grassland would thereby help to offset the impacts of forest removal. The small scale of this removal (72 acres, or less than five percent of the park's forested area) would be only somewhat noticeable within the park itself. Meanwhile the value of the newly created grasslands would be such that the overall long-term regional impacts to vegetation and wildlife would be minor.

Cumulative Impacts. When combined with other past, present, and reasonably foreseeable future projects, the construction-related activities under alternative C, would have an adverse cumulative impact on vegetation and wildlife. The incremental impacts associated with alternative C would be small. The Manassas National Battlefield Park Bypass, Tri-County Parkway, and other nearby road projects have the potential to have adverse impacts on forested areas and associated wildlife because of clearing and construction activities to build the new roads. Collectively,

the cumulative impact would be anticipated to be moderate, long-term, and adverse.

Conclusion. There would be approximately a three percent decrease in the overall woodlands and a similar percent increase in open fields or grassland within the park. A minor long-term adverse impact on vegetation and wildlife would occur in the park. This decrease would result in a negligible change in the extent of vegetative communities within the park, would minimally benefit wildlife species that prefer open or edge habitats, and would negatively affect woodland species. A moderate long-term adverse cumulative impact would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

THREATENED, ENDANGERED, AND RARE SPECIES AND NATURAL COMMUNITIES

Definition of Intensity Levels

Analyses of the potential intensity of special status species were derived from the available literature on the Manassas National Battlefield Park and previous consultation/studies involving the U.S. Fish and Wildlife Service and Virginia Department of Conservation and Recreation. The thresholds of change for the intensity of impacts on special status species are defined as follows:

- *No effect:* The action would cause no effect on the special status species or critical habitat.
- and not able to be meaningfully measured, detected, or evaluated), or it would be completely beneficial.

- *Likely to adversely affect:* The action would likely result in a direct or indirect adverse effect on a species or critical habitat, and the effect would not be discountable or completely beneficial.

Duration: A short-term impact would last less than one year and would affect only one season's use by visitors or the length of construction activities. A long-term impact would last more than one year and would be more permanent in nature.

These definitions are consistent with the language used to determine effects on threatened and endangered species under Section 7 of the Endangered Species Act.

Alternative A—Continuing Current Management Practices (No-Action)

Under the no-action alternative, current management practices would have no effect on threatened, endangered, or rare species or their habitats. No actions under the current management practices were identified now or *Not likely to adversely affect:* The action would be expected to result in discountable effects on a species or critical habitat (that is, extremely unlikely to occur over the next 20 years that would have an effect on threatened and endangered species because no supporting habitats would be disturbed.

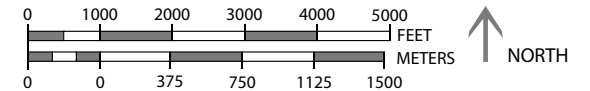
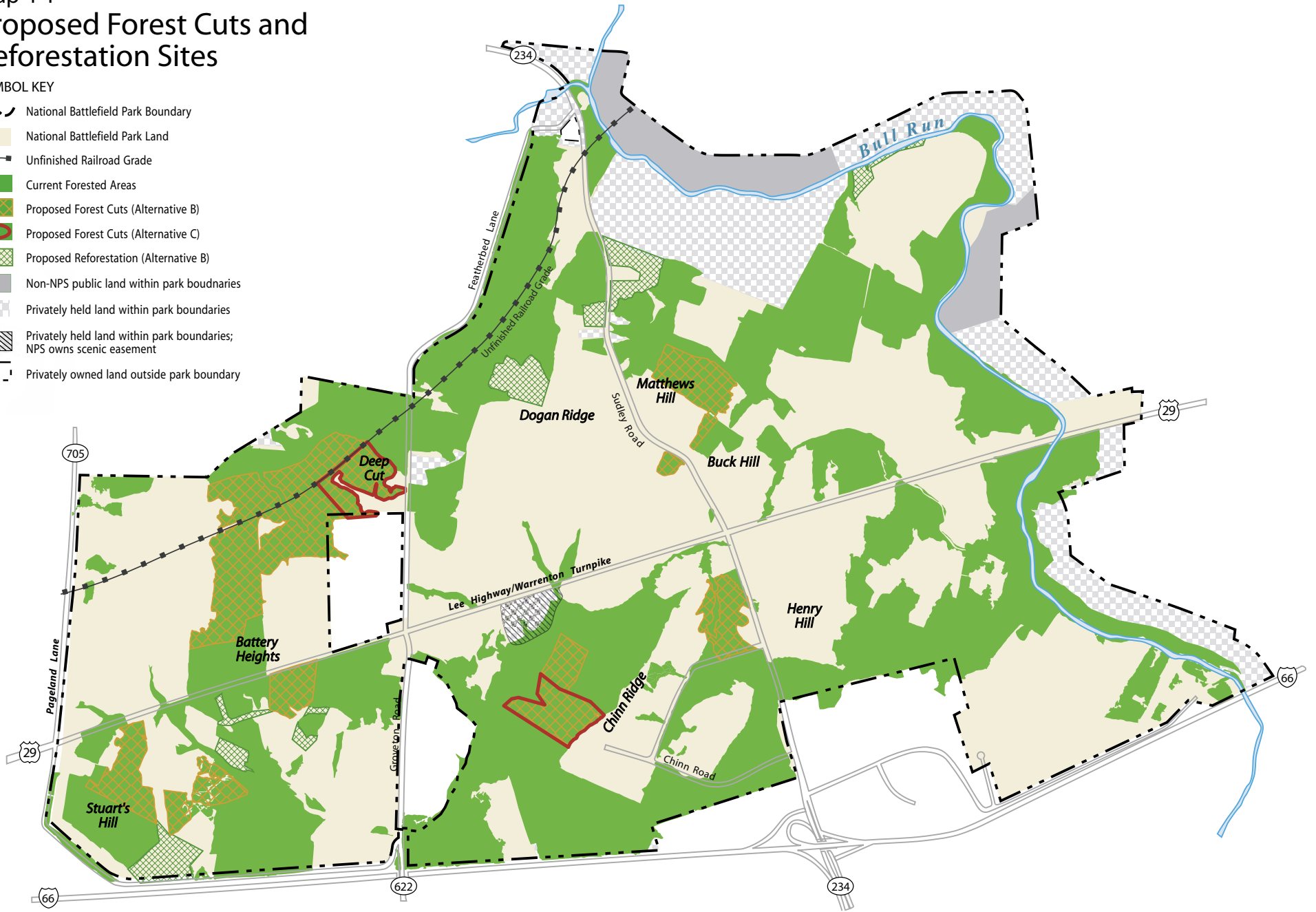
Cumulative Impacts. There would be no cumulative impact because there would be no impacts on threatened, endangered, or rare species or their habitats as a result of maintaining current management practices.

Conclusion. The no-action alternative would have no effect on threatened, endangered, or rare species or their habitats. No cumulative impact would occur. Because there would be no major adverse impact to resources or values, there would be no impairment of the park's resources or values.

Map 4-1 Proposed Forest Cuts and Reforestation Sites

SYMBOL KEY

-  National Battlefield Park Boundary
-  National Battlefield Park Land
-  Unfinished Railroad Grade
-  Current Forested Areas
-  Proposed Forest Cuts (Alternative B)
-  Proposed Forest Cuts (Alternative C)
-  Proposed Reforestation (Alternative B)
-  Non-NPS public land within park boundaries
-  Privately held land within park boundaries
-  Privately held land within park boundaries; NPS owns scenic easement
-  Privately owned land outside park boundary



Alternative B—The Two Battles of Manassas (Preferred Alternative)

There are some populations of state-listed rare plant species near segments of existing trails and other portions of the park, which could be susceptible to disturbance from trail work or other construction. It is expected that trail work could be accomplished without disturbing these populations, although slight realignment of trails may be necessary. Additional environmental studies would be conducted prior to work outside the original footprint of the existing trails at the park. No effect on these species would occur.

It is anticipated that transportation improvements would have no effect on threatened, endangered, or rare species or their habitats because, through further planning and environmental analysis for the proposed transportation improvements, such as the bridge removal, the National Park Service would practice avoidance to the greatest extent possible.

Cultural Landscape Rehabilitation. No known populations of state-listed rare plant species are within the forest removal areas. However, some populations of the listed species occur in open fields adjacent to areas to be cleared. Clearing limits and access routes would be established and clearly marked or fenced to avoid these populations. Best management practices including erosion control measures would be implemented to mitigate possible indirect impacts to these populations from runoff from disturbed areas. Acreage converted to open field would provide additional potential habitat for state rare species associated with these open habitats, which include hairy beardtongue and blue-hearts. The proposed actions described in alternative B would have no impacts on threatened, endangered, or rare species and negligible impacts on their habitats. The negligible impacts on the habitat would have no effect on species populations at the park because the habitat is still abundant.

Historic landscape modification would benefit some species of migratory birds and negatively

affect others, with an overall net loss of forest habitat and a concomitant net gain of open fields. This would be a minor long-term beneficial impact on species that prefer open fields or edge habitat, including the prairie warbler and field sparrow, which are two species of concern. Net loss of woodlands would result in no long-term adverse effect on habitat suitable for forest species, particularly area-sensitive species, which include the Acadian flycatcher and wood thrush. Overall, the loss of woodlands would have no long-term effect on the population of the species at the park because the habitat is still abundant.

Cumulative Impacts. When combined with other past, present, and reasonably foreseeable future projects, the construction-related activities under alternative B would have a short-term adverse cumulative impact on threatened and endangered species. The incremental impacts associated with alternative B would be small. The Manassas National Battlefield Park Bypass, Tri-County Parkway and other nearby road projects have the potential to have adverse impacts on rare, threatened and endangered species and associated habitat because of clearing and construction activities to build the new roads. Collectively the cumulative impact would be anticipated to be minor, long-term, and adverse.

Conclusion. The management prescriptions and proposed actions described in alternative B would have no impacts on threatened, endangered, or rare species and negligible impacts on their habitats, because no supporting habitats would be disturbed. Forest removal to create view corridors would have some minor long-term benefits for some species that prefer open fields or edge habitat, including two species of concern, the prairie warbler and field sparrow, and a minor long-term adverse effect on woodland species, including the wood thrush. No cumulative impacts would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of

Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

Alternative C—The Defining Moments of the Battles of Manassas

There are some populations of state-listed rare plant species near segments of existing trails, which could be susceptible to disturbance from trail work. It is expected that trail work could be accomplished without disturbing these populations, although slight realignment of trails may be necessary. Additional environmental study would be conducted prior to trail work outlined for alternative C.

Additional environmental analysis would be conducted prior to selecting a site for the new visitor center site. The National Park Service would fully consider the potential impacts on threatened, endangered, or rare species or their habitats and practice avoidance to the extent feasible. Best management practices, including erosion control measures, would be implemented.

It is anticipated that transportation improvements would have no effect on threatened, endangered, or rare species or their habitats because, through further planning and environmental analysis for the proposed transportation improvements, such as the bridge removal, the National Park Service would practice avoidance to the greatest extent possible.

No impacts to significant natural communities would occur. No known populations of state-listed rare plant species are within the forest removal areas. However, some populations of these species occur in open fields adjacent to one area to be cleared. Clearing limits and access routes would be established and clearly marked or fenced to avoid these populations. Best management practices, including erosion control measures, would be implemented to

mitigate possible indirect impacts to these populations from runoff from disturbed areas. Acreage converted to open fields would provide additional potential habitat for state-listed rare species associated with these open habitats, which include hairy beardtongue and blue-hearts.

Approximately 72 acres of forested habitat, less than five percent of the forested habitat within the park, would be removed and managed as open fields to provide view corridors. This would create limited additional habitat for species that prefer open fields or edge habitat between forests and fields. These impacts would not be as extensive under this alternative, as compared to alternative B, due to the relatively limited removal of woodlands. The only area-sensitive forest species known to occur within the cut areas is the wood thrush, which does occur in relatively small woodlands.

Cumulative Impacts. When combined with other past, present, and reasonably foreseeable future projects, the construction-related activities under alternative C would have a short-term adverse cumulative impact on threatened and endangered species. The incremental impacts associated with alternative C would be small. The Manassas National Battlefield Park Bypass, Tri-County Parkway and other nearby road projects have the potential to have adverse impacts on rare, threatened and endangered species and associated habitat because of clearing and construction activities to build the new roads. Collectively the cumulative impact would be anticipated to be minor, long-term, and adverse.

Conclusion. The management prescriptions and proposed actions described in alternative C would have no to negligible impacts on threatened, endangered, or rare species or their habitats species because no supporting habitats would be disturbed. Forest removal to create view corridors would have some minor benefits for the prairie warbler, which prefers open fields or edge habitat, and minor negative effect on woodland species, including the

wood thrush. No cumulative impacts would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior’s order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park’s resources or values would not be impaired.

WATER RESOURCES (WATER BODIES, WATER QUALITY, WETLANDS, AND FLOODPLAINS)

Methodology

The impacts discussed for water resources are qualitative because the actions described under each alternative are conceptual at this stage of the planning process. Additional planning and environmental analyses would be conducted to determine site-specific impacts as more detailed plans are developed.

Definition of Intensity Levels

Analyses of the potential intensity of water resources were derived from the available literature on the Manassas National Battlefield Park. The thresholds of change for the intensity of impacts on water resources are defined as follows:

- *Negligible:* An action would have no measurable or detectable effect on the quality, functions, or values of water bodies, wetlands, floodplains, or water quality. The impact is localized and not measurable or at the lowest level of detection.
- *Minor:* An action would have measurable effects on the quality, functions, or values of water bodies, wetlands, floodplains, or water quality. The impact is localized and slight but detectable.
- *Moderate:* An action would have clearly detectable effects on the quality, functions, or values of water bodies, wetlands, floodplains, or

water quality. The impact is readily apparent and appreciable.

- *Major:* An action would have substantial effects on the quality, functions, or values of water bodies, wetlands, floodplains, or water quality. The impact is severely adverse and highly noticeable.
- *Duration:* A short-term impact would last less than one year and would affect only one season’s use by visitors. A long-term impact would last more than one year and would be more permanent in nature.

Alternative A—Continuing Current Management Practices (No-Action)

Under the no-action alternative, the National Park Service would continue current management practices. Ongoing management activities, such as small-scale scene rehabilitation, could have adverse impacts on water resources from sediment erosion during forest removal or construction activities. With best management practices, no adverse impacts would be expected because the area of disturbance would be a sufficient distance from any water resources, and the indirect effects of sediment erosion would be minimized through the use of best management practices such as silt fence.

Cumulative Impacts. No cumulative impact would occur because the no-action alternative would have no **adverse impacts on water resources.**

Conclusion. The no-action alternative would have no impacts on water resources. No cumulative impact would occur. Because there would be no major adverse impact to resources or values, there would be no impairment of the park’s resources or values.

Alternative B—The Two Battles of Manassas (Preferred Alternative)

The upgrade of the Second Manassas Visitor Contact Station at Stuart’s Hill and upgrades to the access road and parking lot could have adverse impact on water resources. The proposed upgrades would not directly affect wetlands or floodplains, but sediment runoff

into nearby water resources could occur. With the use of sediment and erosion control measures, the adverse impact would be short-term and negligible.

Transportation-related improvements under alternative B would have limited actions in the waters, wetlands, or floodplains. The removal of commuter and truck traffic—and the associated reductions in pollution from those vehicles—from the portions of US Route 29 and VA Route 234 that run through the park would have a long-term beneficial impact to water resources by reducing the amount of polluted runoff that would reach these resources. The removal of the U.S. Route 29 bridge over Bull Run would have a long-term beneficial impact to the stream and floodplain and minor short-term adverse impacts during demolition. Minor sediment erosion would occur, although appropriate sediment and erosion control practices could make the adverse impacts to Bull Run negligible. Additional environmental analysis and documentation would be conducted by the National Park Service prior to removal of the bridge.

No seasonally flooded bottomland forests, including riparian stream corridors, and seasonally flooded depressions or pools would be affected by construction or historic scene rehabilitation proposals. Riparian buffers would be maintained along all streams to mitigate potential bank erosion and channel siltation from forest removal areas. Forest removal operations would also incorporate Virginia Department of Forestry best management practices to avoid erosion problems, particularly where disturbance would occur on slopes. No new construction or historic scene rehabilitation proposals would occur within 100-year floodplains. The adverse impact on water resources would be short-term and negligible.

Existing structures within the 100-year floodplains that would continue to be preserved under the alternatives include the Stone House and Thornberry House. Continued preservation of these historic structures, whose locations are integral to their

significance, is considered an excepted action under National Park Service guidelines for compliance with Executive Order 11988, “Floodplain Management.” No new construction or historic scene rehabilitation proposals would occur within 100-year floodplains. Preservation and maintenance activities would have no to negligible impacts **on water resources.**

Cumulative Impacts. No cumulative impact would occur because the alternative B would have no to negligible impacts on water resources.

Conclusion. Implementation of alternative B would have no to negligible adverse impacts on water resources. The removal of the U.S. Route 29 bridge would likely have a minor long-term beneficial impact on the floodplain and stream and negligible short-term adverse impacts during demolition. The National Park Service would conduct additional environmental analysis and documentation prior to removal of the bridge. No cumulative impact would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior’s order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park’s resources or values would not be impaired.

Alternative C—The Defining Moments of the Battles of Manassas

Under alternative C, the National Park Service would construct a new single visitor center to the east of Stone Bridge. Appropriate sediment and erosion control practices would mean that the construction of the visitor center itself would likely have no to negligible adverse impacts on water resources, specifically Bull Run and its associated wetlands and floodplains. However, the new visitor center

ENVIRONMENTAL CONSEQUENCES

would require a new bridge over Bull Run and associated approach roads to connect the visitor center with U.S. Route 29. These actions would have adverse impacts on water resources.

The removal of commuter and truck traffic—and the associated reductions in pollution from those vehicles—from the portions of US Route 29 and VA Route 234 that run through the park would have a long-term beneficial impact to water resources by reducing the amount of polluted runoff that would reach these resources. The removal of the existing U.S. Route 29 bridge would have a long-term, beneficial impact to the stream and floodplain and minor short-term, adverse impacts during demolition. Minor sediment erosion would occur. However, through appropriate sediment and erosion control practices, the adverse impacts to Bull Run would be negligible. Additional environmental analysis and documentation would be conducted by the National Park Service prior to removal of the bridge.

A new road and bridge over Bull Run would be built to connect the new visitor center with U.S. Route 29. This action would have moderate long-term adverse impacts on the stream, the floodplain, and potentially wetlands. The location of the new visitor center and access roads would depend on the alignment of the proposed Battlefield Bypass. An additional study would be conducted prior to selecting any location and alignment. The National Park Service would practice avoidance and minimization to the extent feasible during the planning and design, and would then develop appropriate mitigation to minimize impacts. Prior to making any decisions or implementation, the National Park Service would assess the potential impacts and evaluate the potential alternatives in accordance with the National Environmental Policy Act, Director's Order's 12, and NPS *Management Policies 2001*.

No seasonally flooded bottomland forests, including riparian stream corridors, and/or seasonally flooded depressions or pools would be affected by construction or historic scene

rehabilitation proposals. Riparian buffers would be maintained along all streams to mitigate potential bank erosion and channel siltation from forest removal areas. Forest removal operations would also incorporate Virginia Department of Forestry best management practices to avoid erosion problems, particularly where disturbance would occur on slopes. No new construction or historic scene rehabilitation proposals would occur within 100-year floodplains.

Existing structures within the 100-year floodplains that would continue to be preserved under the alternatives include the Stone House and Thornberry House. Continued preservation of these historic structures, whose locations are integral to their significance, is considered an excepted action under National Park Service guidelines for compliance with Executive Order 11988, "Floodplain Management." No new historic scene rehabilitation proposals or construction related to preservation and maintenance of historic structures would occur within 100-year floodplains. Preservation and maintenance activities would have no to negligible impacts on water resources.

Cumulative Impacts. Other past, present, and reasonably foreseeable future projects such as road projects described in the cumulative impact scenario could have moderate long-term adverse impacts on water resources from construction activities depending on the final corridor selected for each road alignment. Alternative C would add a moderate incremental impact. When these impacts are combined with the construction-related impacts of alternative C, the cumulative adverse impact would be anticipated to be long-term and moderate.

Conclusion. Implementation of alternative C would have moderate long-term adverse impacts on water resources. The new bridge over Bull Run and its associated approach roads would have to cross Bull Run's floodplain and potentially its related wetlands. The new access road and bridge would have moderate long-term, adverse, impacts on the floodplain, stream, and potentially wetlands.

Similar to alternative B, the removal of the U.S. Route 29 bridge would likely have a minor long-term beneficial impact on the floodplain and stream and negligible short-term adverse impacts during demolition. The National Park Service would conduct additional environmental analysis and documentation for each of these actions. A moderate long-term adverse cumulative impact would occur.

Because there would be no major adverse impacts on a resource or value whose

conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

IMPACTS ON CULTURAL RESOURCES

CULTURAL RESOURCES LISTED, OR ELIGIBLE TO BE LISTED, IN THE NATIONAL REGISTER OF HISTORIC PLACES

Potential impacts to cultural resources (archeological resources, historic structures, and cultural landscapes) either listed in or eligible to be listed in the national register of Historic Places were identified and evaluated in accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the National Historic Preservation Act (36 CFR 800, Protection of Historic Properties): by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are national register listed or eligible; (3) applying the criteria of adverse effect to affected resources; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations a determination of adverse effect or no adverse effect must be made for affected national register listed or eligible cultural resources. An adverse effect occurs whenever an action alters directly or indirectly any of the characteristics of a cultural resource that qualify it for inclusion in the national register, i.e., diminishing the integrity (the extent to which a resource retains its historic appearance) of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a)(1)). A determination of no adverse effect means there is an effect, but the effect would not meet the criteria of adverse effect (36 CFR 800.5(b)).

In this general management plan/environmental impact statement the criteria for characterizing the severity or intensity of impacts to national register listed or eligible archeological resources, prehistoric or historic structures, and cultural landscapes are the

§106 determinations of effect: adverse effect or no adverse effect.

MUSEUM COLLECTIONS

Potential impacts to museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens) are described in terms of context (are the effects site-specific, local, or even regional?), duration (are the effects short-term – lasting less than a year, long-term – lasting more than a year, or permanent?) and intensity (is the degree or severity of effects negligible, minor, moderate, or major). The definitions of impact intensity for museum collections follow:

Negligible: impact is at the lowest levels of detection — barely measurable with no perceptible consequences, either adverse or b

Minor: would affect the integrity of few items in the museum collection but would not degrade the usefulness of the collection for future research and interpretation

Moderate: would affect the integrity of many items in the museum collection and diminish the usefulness of the collection for future research and interpretation

Major: would affect the integrity of most items in the museum collection and destroy the usefulness of the collection for future research and interpretation

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Archeological Resources

Archeological resources adjacent to or easily accessible from public access areas would be vulnerable to surface disturbance, inadvertent damage, and vandalism. Soil compaction, a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence would result. Continued

ranger patrol and increased emphasis on visitor education would help discourage inadvertent disturbance of cultural remains and vandalism, and any sites or areas with archeological resources that are subject to continued degradation could be closed to visitor access to better protect the resources. Few, if any, adverse effects would be anticipated.

The limited construction associated with implementation of alternative A (small parking areas and short loop trails and the installation of interpretive displays) could potentially impact archeological resources. Archeological surveys would precede any construction, and known archeological resources would be avoided to the greatest extent possible. If national register eligible or listed archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Virginia State Historic Preservation Officer. Any construction-related impacts to such archeological resources would be adverse; however, because archeological resources would be avoided to the greatest extent possible no adverse impacts are anticipated.

Cumulative Impacts. The construction of U.S. Route 29 and VA Route 234, as well as the development of the Manassas visitor center and other park infrastructure, may have adversely impacted archeological resources due to disturbance during excavation and construction activities.

In addition the development and expansion of communities near the park may also have disturbed archeological resources outside park boundaries, and the continuation of such development could result in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, e.g., construction of the Tri-County Parkway, battlefield bypass, and other road projects, also have the potential to disturb archeological resources outside the park's boundaries. Impacts to national register eligible archeological resources that could not be avoided would be adverse.

As described above, actions associated with implementation of alternative A could potentially impact archeological resources at the park. Few if any adverse effects to archeological resources are anticipated from inadvertent damage or vandalism; however, if national register listed or eligible archeological resources could not be avoided during the construction of parking areas, trails, and interpretive displays, the impacts to such archeological resources would be adverse. Because significant archeological resources would be avoided to the greatest extent possible during implementation of alternative A, the actions associated with the alternative would be expected to contribute only minimally, if at all, to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative A would be a very small component of that cumulative impact.

Conclusion. Few if any adverse effects to archeological resources are anticipated due to inadvertent disturbance or vandalism. Avoidance of national register listed or eligible archeological resources during the construction would result in no adverse impacts to archeological resources. If significant archeological resources could not be avoided during construction, the impacts to such resources would be adverse. A memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated between the staff of Manassas National Battlefield Park and the Virginia State Historic Preservation Officer. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

The actions associated with alternative A would be expected to contribute only minimally, if at all, to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative A would be a

very small component of the cumulative impact.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Historic Structures and Cultural Landscapes

To appropriately preserve and protect national register listed or eligible historic structures and cultural landscapes, all stabilization and preservation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Consequently stabilization and preservation would have no adverse effects on historic structures and cultural landscapes.

Preparation of historic structure reports or cultural landscape reports, as appropriate, would precede the rehabilitation of national register listed or eligible historic structures or cultural landscapes, and any rehabilitation would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed during the rehabilitation of historic structures would be evaluated to determine their value to the park's museum collections and/or for their comparative use in future preservation work. Rehabilitation would have no adverse effects on historic structures or cultural landscapes.

Careful design would ensure that the construction of small parking areas and loop trails, as well as the installation of interpretive displays, would minimally affect the scale and visual relationships among landscape features. In addition, the topography, vegetation, and

land use patterns of landscapes would remain largely unaltered. No adverse impacts would be anticipated.

Continued uncontrolled access to U.S. Route 29 and VA Route 234 by commuter traffic and commercial trucks would cause dissonant sights and sounds to intrude on the battlefield landscape, and vibrations generated by traffic could impact the integrity of the Stone House. Impacts to both the cultural landscape and the Stone House would be adverse.

Cumulative Impacts. Over the years historic structures in Manassas National Battlefield Park have been adversely impacted by the wear and tear associated with visitor access, natural processes such as weathering and erosion, and development. Construction of U.S. Route 29 and VA Route 234, the development of the Manassas visitor center and other park infrastructure, erosion, and the growth of woodlands in what were once grasslands and scrublands have also adversely affected the park's cultural landscapes, resulting in the alteration of landscape elements such as topography, spatial organization, land use patterns, and vegetation.

As described above, the impacts associated with implementation of alternative A would primarily result in no adverse effects to the park's historic structures and cultural landscapes. Because the actions associated with alternative A would contribute only minimal adverse impacts to the adverse impacts of other past, present, or reasonably foreseeable actions, the adverse impacts of alternative A would be a small component of the adverse cumulative impact.

Conclusion. There would be no adverse effects associated with either the preservation and rehabilitation of historic structures and cultural landscapes or the construction of small parking areas, loop trails, and interpretive displays. Continued uncontrolled access to U.S. Route 29 and VA Route 234 by commuter traffic and commercial trucks would intrude on the battlefield landscape, and vibrations generated by traffic could impact the integrity of the Stone House. Because the actions

associated with alternative A would contribute only minimal adverse impacts to the adverse impacts of other past, present, or reasonably foreseeable actions, the adverse impacts of alternative A would be a small component of the adverse cumulative impact.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Museum Collections

Manassas National Battlefield Park's museum collections, both on-site and off-site, would continue to be adequately inventoried, accessioned, and protected according to NPS standards. Because on-site storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an off-site facility, such as the Museum Research Center in Landover, Maryland (where the bulk of the park's museum collections are stored). The utmost care would be exercised during the packing, moving, and unpacking of all collections; therefore, potential impacts to museum collections associated with the risk involved in moving artifacts and archives would be negligible and short term.

Moving additional artifacts and archives from the park to a facility outside the park would be less convenient for park staff that require use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for adequate curation, storage, and research.

Cumulative Impacts. Manassas National Battlefield Park's museum collections would continue to be adequately stored and protected according to NPS standards, both on-site and off-site. In the future more of the

park's museum collections would have to be moved to an off-site repository for adequate curation, storage, and research. Prior to the establishment of the park in 1940, artifacts and archives associated with the First and Second Battles of Manassas may not have received the care and protection such resources are accorded today. Adverse impacts would have been long term and of minor to moderate intensity.

As described above, implementation of alternative A would potentially contribute both minor to moderate adverse and beneficial impacts to the minor to moderate adverse impacts of other past, present, and reasonably foreseeable actions. The cumulative impact to museum collections, however, would be beneficial, long term, and of minor to moderate intensity.

Conclusion. Museum collections would continue to be adequately stored and protected according to NPS standards, both on-site and off-site. Moving artifacts and archives from the park to a facility outside of the park would be less convenient for park staff that requires use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for adequate curation, storage, and research. The cumulative impact to museum collections would be beneficial, long-term, and of minor to moderate intensity.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Archeological Resources

Archeological resources adjacent to or easily accessible from public access areas would be vulnerable to surface disturbance, inadvertent damage, and vandalism. Soil compaction, a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence would result. Continued ranger patrol and increased emphasis on visitor education would help discourage inadvertent destruction of cultural remains and

vandalism, and any sites or areas with archeological resources that are subject to continued degradation could be closed to visitor access to better protect the resources. Few if any adverse effects would be anticipated.

A number of actions associated with implementation of alternative B (e.g., constructing new visitor facilities at the Brawner Farm; landscape rehabilitation; installation of underground utilities for new facilities; development of auto/bicycle tour routes, parking areas, hiking and equestrian trails and restrooms; and building a new entrance road to the Brawner Farm and a new access road to park and visitor facilities at Stuart's Hill) could potentially impact archeological resources. Archeological surveys would precede any construction, and known archeological resources would be avoided during construction to the greatest extent possible. If national register eligible or listed archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Virginia State Historic Preservation Officer. Any construction-related impacts to such archeological resources would be adverse; however, because archeological resources would be avoided to the greatest extent possible no adverse impacts are anticipated.

Prior to the relocation of the existing visitor center at Henry Hill or the removal of the U.S. Route 29 bridge, and before the clearing of trees for landscape rehabilitation, surveys for archeological resources would be designed and conducted in consultation with the Virginia State Historic Preservation Officer. Significant archeological resources would be left *in situ* if possible. If disturbance of such resources was unavoidable, the excavation, recordation, and mapping of the resources would be completed before the removal of the structures or trees, to ensure that significant archeological data that otherwise would be lost is recovered and documented. Impacts to any national register eligible archeological resources would be adverse.

The extent of archeological resources associated with the First and Second Battles of Manassas in the four tracts of land (Davis Tract, Stonewall Memory Garden Tract, Conservation Trust Parcel, Dunklin Monument) proposed for acquisition by the park is unknown. However, transfer of this land to the National Park Service would ensure that any archeological resources discovered would be accorded the protection of federal preservation law, e.g., section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*) – a beneficial effect.

Cumulative Impacts. The construction of U.S. Route 29 and VA Route 234, as well as the development of the Manassas visitor center and other park infrastructure, may have adversely impacted archeological resources due to disturbance during excavation and construction activities.

In addition, the development and expansion of communities near the park may also have disturbed archeological resources outside park boundaries, and the continuation of such development could result in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, e.g., construction of the Tri-County Parkway, battlefield bypass, and other road projects, also have the potential to disturb archeological resources outside the park's boundaries. Impacts to national register eligible archeological resources that could not be avoided would be adverse.

As described above, actions associated with implementation of alternative B could potentially impact archeological resources at the park. Few, if any, adverse effects to archeological resources are anticipated from inadvertent damage or vandalism. If, however, national register listed or eligible archeological resources could not be avoided during either construction or the relocation of the Henry Hill visitor center and removal of the U.S. Route 29 bridge, or during the removal of trees for landscape rehabilitation, the impacts to such archeological resources would be adverse. Because significant archeological

resources would be avoided to the greatest extent possible during implementation of alternative B, the actions associated with the alternative would be expected to contribute only minimally to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative B would be a small component of that cumulative impact.

Conclusion. If significant archeological resources could not be avoided during construction, the impacts to such resources would be adverse. A memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated between the staff of Manassas National Battlefield Park and the Virginia State Historic Preservation Officer. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

The actions associated with alternative B would be expected to contribute only minimally to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative B would be a small component of that cumulative impact.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Historic Structures and Cultural Landscapes

To appropriately preserve and protect national register listed or eligible historic structures and cultural landscapes, all stabilization and

preservation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Consequently, stabilization and preservation would have no adverse effects upon historic structures and cultural landscapes.

Historic structures could suffer increased wear and tear from higher levels of visitation, but monitoring the carrying capacity of historic structures could result in the imposition of visitation levels or constraints that would contribute to the stability or integrity of the resources without unduly hindering interpretation for visitors. Unstaffed or minimally staffed structures could be more susceptible to vandalism. Continued ranger patrol and increased emphasis on visitor education would help discourage inadvertent harm to or vandalism of historic structures, and any structures subject to continued degradation could be closed to visitor access to better protect the resources. Few, if any, adverse effects would be anticipated.

Preparation of historic structure reports or cultural landscape reports, as appropriate, would precede the rehabilitation of national register listed or eligible historic structures or cultural landscapes, and any rehabilitation would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed during the rehabilitation of historic structures would be evaluated to determine their value to the park's museum collections and/or for their comparative use in future preservation work. Rehabilitation would have no adverse effects upon historic structures or cultural landscapes.

As noted above, preparation of a cultural landscape report would precede the rehabilitation of the battlefield landscape. Clearing trees that were not present during either battle and returning the landscape to grasslands and/or scrubland would convert the landscape to more of a semblance of its historic appearance. Vistas of the battlefield would again show the relationship of hills, ridges, and water features

ENVIRONMENTAL CONSEQUENCES

to the positions of the embattled Union and Confederate troops, and contribute to a better understanding of both battles by the visitor. There would be no adverse impacts to cultural landscapes.

Removing the U.S. Route 29 bridge over Bull Run would eliminate a modern intrusion from the viewshed of the stone bridge and the battlefield landscape. Removal of the bridge would have a beneficial effect upon the cultural landscape.

New construction for a Second Manassas Visitor Contact Station at the Brawner Farm would be carefully sited to be as visually unobtrusive as possible, and to minimally affect the scale and visual relationships among character defining landscape features. Sensitive design of the new facilities, the use of appropriate materials and colors in construction, and select plantings of native vegetation as visual buffers, if necessary, would permit new facilities to be as compatible as possible with the historic landscape. No adverse effects would be anticipated.

Careful design would ensure that the rehabilitation of parking areas and the expansion or development of trails would minimally affect the scale and visual relationships among landscape features. In addition, the topography, vegetation, circulation features, and land use patterns of any historic district or cultural landscape would remain largely unaltered, resulting in no adverse effects.

The under-grounding of utilities for new facilities would have minimal, if any, effect on the existing topography, spatial organization, or land use patterns of historic sites or cultural landscapes. Once the underground utility line is installed and the trench is backfilled, the disturbed ground would be restored to its pre-construction contour and condition and appropriately revegetated as necessary. There would be no adverse impacts to cultural landscapes.

Restricting access to U.S. Route 29 and VA Route 234 by commuter traffic and

commercial trucks would reduce dissonant sights and sounds that currently intrude upon the battlefield landscape. Such restrictions would also reduce traffic vibrations that could potentially impact the integrity of the Stone House. Restricting commuter traffic and commercial truck access to U.S. Route 29 and VA Route 234 would result in a beneficial impact to historic structures and cultural landscapes.

Cumulative Impacts. Over the years historic structures in Manassas National Battlefield Park have been adversely impacted by the wear and tear associated with visitor access, natural processes such as weathering and erosion and development. Construction of U.S. Route 29 and VA Route 234, the development of the Manassas visitor center, and other park infrastructure, erosion, and the growth of woodlands in what were once grasslands and scrublands have also adversely affected the park's cultural landscapes, resulting in the alteration of landscape elements such as topography, spatial organization, land use patterns, and vegetation.

As described above, the impacts associated with implementation of alternative B would primarily result in no adverse effects to the park's historic structures and cultural landscapes. Because the actions associated with alternative B would contribute only minimal, if any, adverse impacts to the adverse impacts of other past, present, or reasonably foreseeable actions, the adverse impacts of alternative B would be a very small component of the adverse cumulative impact.

Conclusion. Carefully siting and designing new construction for a Second Manassas Visitor Contact Station at the Brawner Farm would permit new facilities to be as compatible as possible with the historic landscape, and no adverse effects would be anticipated. There would be no adverse effects associated with either the preservation and rehabilitation of historic structures and cultural landscapes or the construction of small parking areas, loop trails, and interpretive displays. Clearing trees that were not present during either battle and returning the landscape to more of a

semblance of its historic appearance would contribute to a better understanding of both battles by the visitor. Restricting access to U.S. Route 29 and VA Route 234 by commuter traffic and commercial trucks would have a beneficial impact on historic structures and cultural landscapes.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Museum Collections

Manassas National Battlefield Park's museum collections, both on-site and off-site, would continue to be adequately inventoried, accessioned, and protected according to NPS standards. Because on-site storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an off-site facility, such as the Museum Research Center in Landover, Maryland (where the bulk of the park's museum collections are stored). The utmost care would be exercised during the packing, moving, and unpacking of all collections; therefore, potential impacts to museum collections associated with the risk involved in moving artifacts and archives would be negligible and short-term.

Moving additional artifacts and archives from the park to a facility outside the park would be less convenient for park staff that require use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for *adequate curation, storage, and research*.

Cumulative Impacts. Manassas National Battlefield Park's museum collections would continue to be adequately stored and

protected according to NPS standards, both on-site and off-site. In the future more of the park's museum collections would have to be moved to an off-site repository for adequate curation, storage, and research. Prior to the establishment of the park in 1940, artifacts and archives associated with the First and Second Battles of Manassas may not have received the care and protection such resources are accorded today. Adverse impacts would have been long term and of minor to moderate intensity.

As described above, implementation of alternative B would potentially contribute both minor to moderate adverse and beneficial impacts to the minor to moderate adverse impacts of other past, present, and reasonably foreseeable actions. The cumulative impact to museum collections, however, would be beneficial, long term, and of minor to moderate intensity.

Conclusion. Museum collections would continue to be adequately stored and protected according to NPS standards, both on-site and off-site. Moving artifacts and archives from the park to a facility outside the park would be less convenient for park staff that require use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for adequate curation, storage, and research. The cumulative impact to museum collections would be beneficial, long term, and of minor to moderate intensity.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Archeological Resources

Archeological resources adjacent to or easily accessible from public access areas would be vulnerable to surface disturbance, inadvertent damage, and vandalism. Soil compaction, a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence would result. Continued ranger patrol and increased emphasis on

visitor education would help discourage inadvertent destruction of cultural remains and vandalism, and any sites or areas with archeological resources that are subject to continued degradation could be closed to visitor access to better protect the resources. Few if any adverse effects would be anticipated.

A number of actions associated with implementation of alternative C (e.g., constructing a new visitor center east of the Stone Bridge, including a new access road and bridge over Bull Run; landscape rehabilitation; installation of underground utilities for new facilities; and the development of hiking and equestrian trails, restrooms, and picnic areas) could potentially impact archeological resources. Archeological surveys would precede any construction, and known archeological resources would be avoided during construction to the greatest extent possible. If national register eligible or listed archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the Virginia State Historic Preservation Officer. Any construction-related impacts to such archeological resources would be adverse; however, because archeological resources would be avoided to the greatest extent possible no adverse impacts are anticipated.

Prior to the removal of the existing visitor center at Henry Hill, the U.S. Route 29 bridge, and the parking area at Battery Heights, and before the clearing of trees for landscape rehabilitation, surveys for archeological resources would be designed and conducted in consultation with the Virginia State Historic Preservation Officer. Significant archeological resources would be left *in situ* if possible. If disturbance of such resources was unavoidable, the excavation, recordation, and mapping of the resources would be completed prior to the removal of the structures or trees, to ensure that significant archeological data that otherwise would be lost is recovered and documented. Impacts to any national register eligible archeological resources would be adverse.

Prior to the relocation of the existing visitor center at Henry Hill or the removal of the U.S. Route 29 bridge, and before the clearing of trees for landscape rehabilitation, surveys for archeological resources would be designed and conducted in consultation with the Virginia State Historic Preservation Officer. Significant archeological resources would be left *in situ* if possible. If disturbance of such resources was unavoidable, the excavation, recordation, and mapping of the resources would be completed prior to the removal of the structures or trees, to ensure that significant archeological data that otherwise would be lost is recovered and documented. Impacts to any national register eligible archeological resources would be adverse.

The extent of archeological resources associated with the First and Second Battles of Manassas in the four tracts of land (Davis Tract, Stonewall Memory Garden Tract, Conservation Trust Parcel, Dunklin Monument) proposed for acquisition by the park is unknown. However, transfer of this land to the National Park Service would ensure that any archeological resources discovered would be accorded the protection of federal preservation law, e.g., section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*) – a beneficial effect.

Cumulative Impacts. The construction of U.S. Route 29 and VA Route 234, as well as the development of the Manassas visitor center and other park infrastructure, may have adversely impacted archeological resources due to disturbance during excavation and construction activities.

In addition, the development and expansion of communities near the park may also have disturbed archeological resources outside park boundaries, and the continuation of such development could result in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, e.g., construction of the Tri-County Parkway, battle-field bypass, and other road projects, also have the potential to disturb archeological resources

outside the park's boundaries. Impacts to national register eligible archeological resources that could not be avoided would be adverse.

As described above, actions associated with implementation of alternative C could potentially impact archeological resources at the park. Few, if any, adverse effects to archeological resources are anticipated from inadvertent damage or vandalism. If, however, national register listed or eligible archeological resources could not be avoided during construction activities, the removal of existing structures, or during the removal of trees for landscape rehabilitation, the impacts to such archeological resources would be adverse. Because significant archeological resources would be avoided to the greatest extent possible during implementation of alternative C, the actions associated with the alternative would be expected to contribute only minimally to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative C would be a small component of that cumulative impact.

Conclusion. If significant archeological resources could not be avoided during construction, the impacts to such resources would be adverse. A memorandum of agreement, in accordance with 36 CFR Part 800.6, *Resolution of Adverse Effects*, would be negotiated between the staff of Manassas National Battlefield Park and the Virginia State Historic Preservation Officer. The memorandum of agreement would stipulate how the adverse effects would be mitigated.

The actions associated with alternative C would be expected to contribute only minimally to the adverse impacts of other past, present, or reasonably foreseeable actions. Although the cumulative impact would be adverse, any adverse impacts to archeological resources resulting from implementation of alternative C would be a small component of that cumulative impact.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Historic Structures and Cultural Landscapes

To appropriately preserve and protect national register listed or eligible historic structures and cultural landscapes, all stabilization and preservation efforts, as well as daily, cyclical, and seasonal maintenance, would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Consequently, stabilization and preservation would have no adverse effects upon historic structures and cultural landscapes.

Historic structures could suffer increased wear and tear from higher levels of visitation, but monitoring the carrying capacity of historic structures could result in the imposition of visitation levels or constraints that would contribute to the stability or integrity of the resources without unduly hindering interpretation for visitors. Unstaffed or minimally staffed structures could be more susceptible to vandalism. Continued ranger patrol and increased emphasis on visitor education would help discourage inadvertent harm to or vandalism of historic structures, and any structures subject to continued degradation could be closed to visitor access to better protect the resources. Few, if any, adverse effects would be anticipated.

Preparation of historic structure reports or cultural landscape reports would precede the rehabilitation of national register listed or eligible historic structures or cultural landscapes, and any rehabilitation would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of*

Historic Properties (1995). Any materials removed during the rehabilitation of historic structures would be evaluated to determine their value to the park's museum collections and/or for their comparative use in future preservation work. Rehabilitation would have no adverse effects on historic structures or cultural landscapes.

As noted above, preparation of a cultural landscape report would precede the rehabilitation of the battlefield landscape. Clearing trees that were not present during either battle and returning the landscape to grasslands and/or scrubland would convert the landscape to more of a semblance of its historic appearance. Vistas of the battlefield through the clearings would again show the relationship of hills, ridges, and water features to the positions of the embattled Union and Confederate troops, and contribute to a better understanding of both battles by the visitor. There would be no adverse impacts to cultural landscapes.

Removal of the visitor center at Henry Hill and the U.S. Route 29 bridge over Bull Run would eliminate modern intrusions from the battlefield landscape, and return the landscape to more of a semblance of its historic appearance. There would be no adverse impacts to cultural landscapes.

The new visitor center east of the Stone Bridge, including a new access road and bridge over Bull Run, would be carefully sited to be as visually unobtrusive as possible, and to minimally affect the scale and visual relationships among character-defining landscape features. Sensitive design of the new structures, the use of appropriate materials and colors in construction, and select plantings of native vegetation as visual buffers, if necessary, would permit new structures to be as compatible as possible with the historic landscape. No adverse effects would be anticipated.

Careful design would ensure that the rehabilitation of parking areas and the expansion or development of trails would minimally affect the scale and visual relationships among landscape features. In addition, the topography, vegetation, circulation features, and land-use

patterns of any historic district or cultural landscape would remain largely unaltered, resulting in no adverse effects.

The undergrounding of utilities for new facilities would have minimal, if any, effect on the existing topography, spatial organization, or land-use patterns of historic sites or cultural landscapes. Once the underground utility line is installed and the trench is backfilled, the disturbed ground would be restored to its pre-construction contour and condition and appropriately revegetated as necessary. There would be no adverse impacts to cultural landscapes.

Restricting access to U.S. Route 29 and VA Route 234 by commuter traffic and commercial trucks would reduce dissonant sights and sounds that currently intrude upon the battlefield landscape. Such restrictions would also reduce traffic vibrations that could potentially impact the integrity of the Stone House. Restricting commuter traffic and commercial truck access to U.S. Route 29 and VA Route 234 would result in a beneficial impact to historic structures and cultural landscapes.

Cumulative Impacts. Over the years historic structures in Manassas National Battlefield Park have been adversely impacted by the wear and tear associated with visitor access, natural processes such as weathering and erosion, and development. Construction of U.S. Route 29 and VA Route 234, the development of the Manassas visitor center, and other park infrastructure, erosion, and the growth of woodlands in what were once grasslands and scrublands have also adversely affected the park's cultural landscapes, resulting in the alteration of landscape elements such as topography, spatial organization, land use patterns, and vegetation.

As described above, the impacts associated with implementation of alternative C would primarily result in no adverse effects to the park's historic structures and cultural landscapes. Because the actions associated with alternative C would contribute only minimal, if any, adverse impacts to the adverse impacts of other past, present, or reasonably foreseeable

actions, the adverse impacts of alternative C would be a small component of the adverse cumulative impact.

Conclusion. Carefully siting and designing new construction for a Second Manassas Visitor Contact Station at the Brawner Farm would permit new facilities to be as compatible as possible with the historic landscape, and no adverse effects would be anticipated. There would be no adverse effects associated with either the preservation and rehabilitation of historic structures and cultural landscapes or the construction of small parking areas, loop trails, and interpretive displays. Clearing trees that were not present during either battle and returning the landscape to more of a semblance of its historic appearance would contribute to a better understanding of both battles by the visitor. Restricting access to U.S. Route 29 and VA Route 234 by commuter traffic and commercial trucks would have a beneficial impact upon historic structures and cultural landscapes.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Manassas National Battlefield Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values.

Museum Collections

Manassas National Battlefield Park's museum collections, both on-site and off-site, would continue to be adequately inventoried, accessioned, and protected according to NPS standards. Because on-site storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an off-site facility such as the Museum Research Center in Landover, Maryland (where the bulk of the park's museum collections are stored). The utmost care would be exercised during the packing, moving, and unpacking of all collections; therefore, poten-

tial impacts to museum collections associated with the risk involved in moving artifacts and archives would be negligible and short term.

Moving additional artifacts and archives from the park to a facility outside the park would be less convenient for park staff who require use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for adequate curation, storage, and research.

Cumulative Impacts. Manassas National Battlefield Park's museum collections would continue to be adequately stored and protected according to NPS standards, both on-site and off-site. In the future more of the park's museum collections would have to be moved to an off-site repository for adequate curation, storage, and research. Prior to the establishment of the park in 1940, artifacts and archives associated with the First and Second Battles of Manassas may not have received the care and protection such resources are accorded today. Adverse impacts would have been long-term and of minor to moderate intensity.

As described above, implementation of alternative C would potentially contribute both minor to moderate adverse and beneficial impacts to the minor to moderate adverse impacts of other past, present, and reasonably foreseeable actions. The cumulative impact to museum collections, however, would be beneficial, long term, and of minor to moderate intensity.

Conclusion. Museum collections would continue to be adequately stored and protected according to NPS standards, both on-site and off-site. Moving artifacts and archives from the park to a facility outside the park would be less convenient for park staff that requires use of the collections for research – a minor, adverse, long-term impact. However, there would be minor to moderate beneficial impacts associated with providing more space for adequate curation, storage, and research. The cumulative impact to museum collections would be beneficial, long term, and of minor to moderate intensity.

IMPACTS ON TRANSPORTATION

METHODOLOGY

In the impact analysis for transportation, the National Park Service considered the potential effects of the proposed controlled access measures (e.g., gates, entrance stations, signs, road closures, etc.) and transportation improvements on internal circulation patterns, safety, and traffic operations within the park. Only broad judgment can be made on the potential direct and secondary impacts on traffic outside the park boundaries. These potential impacts are being evaluated in detail as part of the Bypass Study. As a result, the implementation of any controlled access or road closures is dependent on the outcome of the Bypass Study, and additional analysis would be needed to further supplement the transportation analysis in this General Management Plan.

Unless specified, this impact analysis refers to the proposed transportation-related actions collectively as transportation improvements. With a large scale plan such as a general management plan, future implementation proposals would typically be tiered (procedurally connected) to this broad scale general management plan and additional planning and environmental analysis would be conducted in accordance with the National Environmental Policy Act, Director's Order 12, and NPS *Management Policies 2001*. This is especially true with the transportation improvements and controlled access measures described under alternative B and alternative C. As a result, this analysis is primarily qualitative and is designed to provide the park superintendent with overall management direction. These transportation improvements are also described under other impact topics such as soundscape, visitor experience and use, and social impacts.

Definition of Intensity Levels

Analyses of the potential intensity of transportation (traffic) were derived from various studies and information available on the traffic conditions at the Manassas National

Battlefield Park such as the *Manassas National Battlefield Park Bypass Study Existing Conditions Report* (FHWA, 2002), and the *Manassas National Battlefield Park Transportation Study* (NPS, 1996). Definitions for the thresholds of change for the intensity of impacts on transportation are as follows:

- *Negligible*: Effects would not be considered detectable and would have no discernible effect on traffic flow and/or traffic safety conditions.
- *Minor*: Effects on traffic flow and/or traffic safety conditions would be slightly detectable but not expected to have an overall effect on those conditions.
- *Moderate*: Effects would be clearly detectable and could have an appreciable effect on traffic flow and/or traffic safety conditions.
- *Major*: Effects would be substantial, with a highly noticeable influence on traffic flow and/or traffic safety conditions and could permanently alter those conditions.
- *Duration*: A short-term impact would last less than one year and would affect only one season's—or the length of construction activities—use by visitors. A long-term impact would last more than one year and would be more permanent in nature.

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Under the no-action alternative, the National Park Service would not control access on or close U.S. Route 29 or VA Route 234. The traffic signal at the intersection of U.S. Route 29 and VA Route 234 would remain in place due to heavy traffic volumes. The traffic flow and operations would continue to be adversely impacted by existing conditions.

Levels of Service are described by a letter designation ranging from “A” to “F,” with level of service “A” representing essentially uninterrupted flow, and level of service “F” representing a breakdown of traffic flow with excessive congestion and delay. The signalized intersection capacity analysis results in an overall Level of Service, representative of all

movements through the intersection. Level of service “D” or better is typically considered acceptable in most metropolitan areas. The intersection of U.S. Route 29 and VA Route 234 would continue to operate at Level of Service “F.”

As northern Virginia and Prince William County populations continue to grow, commuter traffic volumes and traffic operations on U.S. Route 29 and VA Route 234 would be expected to worsen unless a bypass is constructed, alternate routes outside the park are improved, or other controlled access measures are implemented. As the bypass alternatives are further refined, the traffic modeling for each alternative would predict the impacts of the bypass on traffic volumes on U.S. Route 29 and VA Route 234 within the park. It is anticipated that the bypass alone would reduce traffic volumes on U.S. Route 29 and VA Route 234 but not to the level that would be acceptable to the motorists. Therefore, additional control access measures would be needed to achieve the desired traffic levels and operations. Under the No-Action alternative, commuter and truck traffic would continue to have a major long-term adverse impact on transportation within the park causing excessive delays for motorists during peak periods.

Cumulative Impacts. The projects described in the cumulative impact scenario would all have beneficial impacts on transportation in the park because, taken together, they would increase regional mobility while creating a small potential reduction of traffic volumes on park roadways. Alternative A does not propose any additional projects that would create cumulative impacts. Therefore, no cumulative transportation impacts would occur under alternative A.

Conclusion. Under alternative A, the continually rising levels of non-park commuter and commercial traffic would continue to have a major long-term adverse impact on transportation within the park. It would cause excessive delays for, and could pose a safety threat to park visitors in automobiles, on bicycle, or on foot, especially during peak periods. No cumulative impacts would occur.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Under alternative B, the National Park Service would implement traffic control measures to eliminate commuter traffic in the park. For the purposes of this study, the National Park Service considered a scenario that included the construction of gates, entrance stations, or some other form of control in the following locations: on VA Route 234 north of the Northern Virginia Community College entrance, along VA Route 234 north of VA Route 622 (Featherbed Lane), and along U.S. Route 29 east of VA Route 705 (Pageland Lane). In addition, the National Park Service would remove the U.S. Route 29 bridge over Bull Run.

Controlling access into the park on VA Route 234 north of the Community College has a dual purpose: eliminating commuter traffic and collecting fees to generate park revenue. As a result, the access control facility would likely be in the form of an entrance station. In addition, an entrance station may be desirable at the other park entrances to collect park fees. Under this scenario, all commuter traffic would be expected to be diverted to other roadways outside the park because of the controlled access measures at each of the three major entrances into the park.

A bypass or combination of measures described above could be successful in reducing commuter traffic in the park. Therefore, phased implementation of controlled measures is being considered by the National Park Service. Additional study would be performed to determine the appropriate controls devices and measures. This section provides the National Park Service with general management direction that the controlled access at entry points would achieve the elimination of commuter traffic within the Park.

Under the controlled access scenario at the three major entrances, a level of service “B” or better would be achieved on the road and at each intersection. Implementation of

controlled access would have a major, direct, long-term, beneficial impact on traffic operations. The Level of Service would increase from “F” to “B.” In addition, these improvements would have an indirect, beneficial, long-term, impact to the visitor experience and pedestrian and motorist safety within the park from decreased traffic volumes with the Park. The reduction in traffic volumes would increase the visitor carrying capacity at the Park, which may allow the park to receive increased visitation and therefore increased revenues.

The placement of an entrance station on the south end of the park on VA Route 234 would require provisions to minimize the potential impacts associated with queuing of automobiles. Based on a preliminary review, the queue scenario during peak visitation would require that the National Park Service make provisions for an additional gate or entrance to minimize the delays to community college and nearby commercial properties south of the park. It is estimated that the queue for a one-lane entrance station could create considerable backups that would impact the operation of other roads, and could negatively impact nearby residences and businesses. Additional study would be required during the design of any controlled access on VA Route 234. However, the preliminary investigation indicates that provisions for a second lane would be necessary to handle the incoming traffic during peak visitation periods. It is anticipated that through future planning and design the impacts on transportation would be minimized to have no or negligible adverse impacts on the nearby college and businesses.

The U.S. Route 29 bridge over Bull Run is expected to be removed, making it impossible for traffic to enter or leave the park along this roadway. In addition, the removal of the U.S. Route 29 Bridge over Bull Run will help rehabilitate the cultural landscape and historic setting of the Stone Bridge by eliminating the modern highway bridge from the Stone Bridge viewshed. The removal of the U.S. Route 29 bridge would be part of the phased approach to reduce commuter traffic in the park and would have a major direct long-term beneficial

impact on transportation in the park. The removal of the bridge would be an irreversible commitment of resources and is described in more detail at the end of this chapter.

The series of other transportation improvements would have a beneficial impact on traffic flow, circulation, and operation as well as visitor safety. These actions include:

- Eliminating the traffic signal at the intersection of U.S. Route 29 and VA Route 234
- Reducing speed limits to 25 mph
- Designating bicycle lanes along primary roads
- Placing an additional four-way stop sign and pedestrian crossing signs placed at intersections with secondary roads and trail routes
- Replacing the orientation and directional signs

The transportation improvements proposed under alternative B would have a long-term, moderate beneficial impact on transportation systems, thereby improving motorist and pedestrian safety in the park.

Cumulative Impacts. The transportation improvements under alternative B, when combined with other past, present, and reasonably foreseeable future projects would have a beneficial cumulative impact on transportation. The incremental impacts associated with alternative B would be moderate. The transportation improvements identified in the Bypass Study, Tri-County Parkway Study, I-66 Study, and VA Route 234 Bypass North Study would have beneficial impacts on transportation because of increased capacity of the regional roadway network surrounding the park. Collectively the cumulative impact would be anticipated to be major, long-term, and beneficial.

Conclusion. The controlled access measures and removal of the U.S. Route 29 bridge over Bull Run proposed under alternative B would have a major long-term beneficial impact on transportation within the park because of the reduction in commuter and truck traffic in the park. The controlled access measures and transportation improvements would also result in a long-term moderate beneficial impact on

motorist and pedestrian safety. The impacts on transportation operations and congestion from the closure of the roads are being considered under the Bypass Study. The National Park Service would conduct additional planning and environmental analysis prior to choosing a preferred method for controlling access into the park and closing the roads to the public. Additional public outreach would be part of the planning process. The transportation improvements would have a major long-term beneficial cumulative impact on the regional transportation system when added to other regional transportation projects in the immediate vicinity of the park.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Under alternative C, many of the proposed transportation improvements (i.e., controlled access at three entrances, removal of the U.S. Route 29 bridge over Bull Run, etc.) are the same as alternative B. Therefore, the impacts associated with these actions would be the same as described for alternative B.

One exception is the new road and bridge over Bull Run on the east side of the park (in conjunction with the new visitor center). This road would also include a controlled access point. Therefore this entrance would not

increase commuter traffic volumes. Traffic circulation would be different than alternative B due to this fourth park entrance, but the change should not have an adverse impact on circulation. Potential transportation impacts associated with a new visitor center would be dependent on the specific location of the visitor center. Additional study would be conducted to further assess the potential effects on a new visitor center and new access point on transportation.

Cumulative Impacts

The cumulative impact would be the same as described for alternative B. The transportation improvements under alternative C when combined with other past, present, and reasonably foreseeable future projects would have a beneficial cumulative impact on transportation. The incremental impacts associated with alternative C would be moderate. The transportation improvements identified in the Bypass Study, Tri-County Parkway Study, I-66 Study, and VA Route 234 Bypass North Study would have beneficial impacts on transportation because of increased capacity of the regional roadway network surrounding the park. Collectively the cumulative impact would be anticipated to be major, long-term, and beneficial.

Conclusion

Overall, controlled access measures would have a major long-term beneficial impact on transportation in the park by eliminating commuter and commercial traffic and dramatically reducing traffic volumes. The transportation improvements when added to other proposed projects would have a major long-term beneficial cumulative impact on transportation. Because there would be no major adverse impact to resources or values, there would be no impairment to park resources or values.

IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

METHODOLOGY

The National Park Service applied logic, experience, professional expertise, and professional judgment to analyze the impacts on the social and economic situation resulting from each alternative. The analysis focused primarily on the potential impacts to residents that require access through the park to get to their homes. Further study would be performed by the National Park Service to determine the type and location of controlled access (gates, entrance stations, signs, etc.). For this programmatic study, the impacts discussed are qualitative and additional planning and environmental analysis would be conducted to determine site-specific impacts on the socio-economic environment. As part of the Bypass Study, the Federal Highway Administration is considering the potential impacts to the social-economic environment outside park boundaries resulting from the closure of U.S. Route 29 and VA Route 234 to heavy commuter traffic.

Definition of Intensity Levels

Definitions for the thresholds of change for the intensity of impacts on socioeconomics are as follows:

- *Negligible*: Impacts on socioeconomic conditions would be below or at the level of detection. The impact is localized and not measurable or at the lowest level of detection.
- *Minor*: Impacts on socioeconomic conditions would be slight but detectable.
- *Moderate*: Impacts on socioeconomic conditions would be readily apparent and would result in changes to socioeconomic conditions on a local scale.
- *Major*: Impacts on socioeconomic conditions would be readily apparent, resulting in demonstrable changes to socioeconomic conditions in the region.
- *Duration*: In general, short-term impacts are temporary in duration and typically are transitional effects associated with implementation of an action (e.g., related to construction activities) and are less than one

year. In contrast, long-term impacts may have a permanent effect on the socioeconomic environments and their effect extends beyond one year.

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Under the no-action alternative, there would be no change in the ability of an individual to access residential areas or private or public facilities in or adjacent to the park boundaries. There would be no change to local businesses that use U.S. Route 29 and VA Route 234 to transfer goods and commodities. Therefore, no impact to the social-economic environment would occur.

Cumulative Impacts

No cumulative impacts would occur because there would be no impact or change to the socioeconomic environment caused by the no-action alternative.

Conclusion

The no-action alternative would have no impacts to the socioeconomic environment. No cumulative impact would occur. Because there would be no major adverse impact to resources or values, there would be no impairment of the park's resources or values.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Under the controlled access scenario described in the transportation section, residents would be required to enter their properties through some method of controlled access such as a gate, entrance station, etc. The National Park Service would make special provisions for residents who require access through the park to get to their property. These provisions would give the residents and their guests and service providers the ability to use the gates as needed for the purposes of

accessing their home and/or property. It is anticipated the effects on residents would be the equivalent to living within a gated residential community. The inconvenience to residents is estimated on average to be less than 30 seconds each time someone has to use the gate.

The time associated with using the gate would be offset by eliminating the delays associated with current traffic conditions within the park. For instance, during peak commuter traffic, residents currently have to wait through as many as two to three traffic signal cycles (up to two minutes) to pass through the intersection of VA Route 234 and U.S. Route 29. Under alternative B, commuter traffic would be substantially reduced with levels of service at major intersections and roads within the park improving to level of service "B" or better. Overall, the controlled access measures would have long-term, beneficial impacts on the social setting because of decreased delays at intersections and reduced traffic volumes on the state and U.S. routes in the park.

The removal of the U.S. Route 29 bridge over Bull Run would inconvenience residents who currently use this entrance to access their homes. Under alternative B, these residents would be required to use the Battlefield Bypass or alternative routes such as Interstate 66. The adverse impacts associated with the removal of the U.S. Route 29 bridge are expected to be minor and long-term to residents living within or adjacent to the park. Only a few residents would experience an inconvenience from having to use an alternate route, and their additional traveling distance would be less than 5 miles. Impacts of this closure to residents living outside of the park are discussed in the Bypass Study.

The implementation of gates or controlled access would provide residents the security benefits that are typically associated with a gated community. Controlled access would eliminate access to property within the park boundaries for individuals who do not have permission or purpose.

Special provisions would be made for expedited park access for emergency response vehicles. In most cases, response times would be shorter than current conditions permit because the commuter traffic within the park would be eliminated. The removal of the U.S. Route 29 bridge over Bull Run would be expected to have negligible impacts on emergency response, since a number of emergency response stations service the park from the west and south. The Manassas National Battlefield Park is served primarily by Stonewall Jackson Volunteer Fire Department, Station 11, at 7814 Garner Drive, Manassas. The station is approximately 1.7 miles from the southern entrance on VA Route 234 and approximately 3 miles from the central area of the park. The response time is approximately 5 minutes, but may be greater depending on traffic congestion on the roads. The response time would not be expected to change due to the development of controlled access points on VA Route 234 and U.S. Route 29 because reduced traffic congestion (made possible by the bypass) would offset any additional time necessary to enter through the controlled access points.

Road closures and controlled access would have adverse impacts on nearby local businesses that use U.S. Route 29. The impacts are quite dependent on the location of a bypass and are therefore being considered as part of the Bypass Study. The impacts associated with controlled access would be minor if a bypass route is provided and would likely affect only a few businesses.

Other proposed actions under alternative B such as orientation and visitor services; cultural landscape rehabilitation; and preservation and maintenance of historic structures would have no or negligible adverse impacts to residents or businesses within or adjacent to the park boundaries.

Cumulative Impacts

When combined with other past, present, and reasonably foreseeable future projects such as pending road construction projects, the socioeconomic impacts of alternative B, would have

adverse cumulative impacts. The socioeconomic impacts are largely dependent on the alternatives selected for each pending road project. However, the impacts would likely be minor because of the potential impacts on only a few residents. The incremental impacts associated with implementation of alternative B would be expected to be small. Therefore, the cumulative impacts would be anticipated to be minor.

Conclusion

Implementation of alternative B would have negligible long-term adverse impacts on residents living within controlled access area because the delays associated with controlled access measures and removal of the U.S. Route 29 bridge over Bull Run. The impacts would be offset by the reduction in traffic and associated delays at the intersections within the park. In addition, there would be the added security benefit to residents living within the confines of a gated area. Negligible impacts to emergency response would occur. The National Park Service would conduct additional planning and environmental analysis prior to implementation. Minor, adverse cumulative impacts would occur.

Because there would be no major adverse impacts on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the Secretary of Interior's order establishing Manassas National Battlefield Park; (2) key to its natural or cultural integrity or to opportunities for its enjoyment; or (3) identified as a goal in its general management plan or other relevant National Park Service planning documents, the park's resources or values would not be impaired.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Under alternative C, the proposed transportation improvements (i.e., controlled access at entrances, removal of the U.S. Route 29 bridge over Bull Run, etc.) are similar to alternative B, with the addition of a fourth entry point on the eastern side of the park. Therefore, the impacts on the socioeconomic environment would be similar to that described for alternative B.

Cumulative Impacts

When combined with other past, present, and reasonably foreseeable future projects such as pending road construction projects, the socioeconomic impacts of alternative C, would have adverse cumulative impacts. The socioeconomic impacts are largely dependent on the alternatives selected for each pending road project. However, the impacts would likely be minor because of the potential impacts on only a few residents. The incremental impacts associated with implementation of alternative B would be expected to be small. Therefore, the cumulative impacts would be anticipated to be minor.

Conclusion

Implementation of alternative C would have negligible long-term adverse impacts on residents living within controlled access area because the delays associated with controlled access measures and removal of the U.S. Route 29 bridge over Bull Run. The impacts would be offset by the reduction in traffic and associated delays at the intersections within the park. In addition, there would be the added security benefit to residents living within the confines of a gated area. Negligible impacts to emergency response would occur. The National Park Service would conduct additional planning and environmental analysis prior to implementation. Minor, adverse cumulative impacts would occur.

IMPACTS ON RECREATION

METHODOLOGY

In the impact assessment for recreation, the National Park Service study team focused on changes to the levels of recreational opportunities for visitors of the Manassas National Battlefield Park. The National Park Service also considered the physical impacts associated with any new developmental plans and anticipated visitor uses. The context of the evaluation was the park and immediate surrounding area.

Definition of Intensity Levels

Analyses of the potential intensity levels resulting from each alternative on recreation were derived from the available information from the park, Prince William County, and regional agencies in northern Virginia. Definitions for the thresholds of change for the intensity of impacts on recreation are as follows:

- *Negligible*: The impact is localized and not measurable and would not have a noticeable effect on the level of recreation opportunities or recreation facilities available for public use.
- *Minor*: The impact is localized but detectable and would have a slight effect on the level of recreation opportunities or facilities available for public use.
- *Moderate*: The impact is readily apparent and appreciable and would result in a noticeable increase or reduction in the level of recreation opportunities or facilities available for public use.
- *Major*: The impact is severely adverse and highly noticeable. The impact would result in a permanent loss or gain of recreation opportunities or facilities available for public use.
- *Duration*: A short-term impact would last less than one year and would affect only one season's use by visitors or the length of construction activities. A long-term impact would last more than one year and would be more permanent in nature.

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Under the no-action alternative, there would be no change to recreational opportunities or facilities available at the park or at nearby parks. Current management practices would maintain the recreational opportunities such as hiking and horseback riding at the park. Outside the park, current management practices would have no effect on recreational opportunities at nearby parks, ball fields, and other recreational areas. Therefore, there would be no impact on recreation.

Cumulative Impact

No impact on recreation would occur; therefore, no cumulative impact would occur.

Conclusion

No impact on existing or future recreational opportunities or facilities would occur. No cumulative impact would occur.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Improved access and parking as well as a new equestrian trail at Stuart's Hill would enhance recreational facilities at the park. As a result of new trails, alternative B would have a minor long-term beneficial impact on recreation.

Cumulative Impact

The picnic area construction as part of the Stuart's Hill Tract Rehabilitation had recreational benefits to the park. This project, in combination with alternative B would have long-term, beneficial impacts to the park. The incremental impact from alternative B would be minor, and the overall cumulative impact would be minor and beneficial.

Conclusion

Alternative B would have a minor, long-term, beneficial impact from the addition of and/or improvements to new hiking and bridle trails. A minor beneficial cumulative effect on recreation would occur. There would be no impairment to park resources or values.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Improved access and parking as well as a new equestrian trail at Stuart’s Hill would enhance recreational opportunities. As a result of new trails, alternative C would have a minor long-term beneficial impact on recreation.

Cumulative Impact

The cumulative impacts would be the same as described for alternative B. The picnic area construction as part of the Stuart’s Hill Tract rehabilitation had recreational benefits to the park from the addition of the picnic area. This project in combination with alternative C would have long-term beneficial impacts to the park. The incremental impact from alternative C would be minor, and overall, the cumulative impact would be minor and beneficial.

Conclusion

Alternative C would have a minor, long-term, beneficial impact from the addition of and/or improvements to new hiking and bridle trails. A minor beneficial cumulative effect on recreation would occur. There would be no impairment to park resources or values.

IMPACTS ON VISITOR EXPERIENCE

METHODOLOGY

This impact analysis considers various aspects of visitor experience and use at Manassas National Battlefield Park. Topics include the effects on visitors' ability to experience the park's primary resources and their natural and cultural settings (including vistas, natural sounds and smells, and wildlife); overall visitor access to the park; the freedom to experience resources at one's own pace; education and interpretive opportunities; and access for people with disabilities. The analysis is based on how visitor use and experiences would change with the way management prescriptions were applied in the alternatives. The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives.

DEFINITION OF INTENSITY LEVELS

The thresholds of change for the intensity of impacts on visitor experience and use are defined as follows:

- *Negligible*: The impact would be a change that would not be perceptible or would be barely perceptible by most visitors.
- *Minor*: The impact would change a few visitors' experiences, which would be noticeable, but would result in little distraction or improvements in the quality of the experience.
- *Moderate*: The impact would change a large number of visitors' experiences that would result in a noticeable decrease or improvement in the quality of the experience. This would be indicated by a temporary change in frustration level or inconvenience.
- *Major*: The impact has a substantial improvement to many visitors' experiences or a severe drop in the quality of many visitors' experience, such as the addition or elimination of a recreational opportunity or a permanent change to an area.
- *Duration*: A short-term impact would last less than one year and would affect only one season's use by visitors. A long-term impact would last more than one year and would be more permanent in nature.

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Visitor experiences would continue to be adversely effected due to heavy volumes of commuter and commercial truck traffic through the park. Drivers of non-park traffic attempting to get through the park as quickly as possible conflict with the slower moving park traffic. Park visitors are usually looking for the visitor center, headquarters, and various auto tour stops throughout. The faster moving non-park traffic is distracting and potentially dangerous to park visitors attempting to locate park facilities, and often creates problems for visitors who wish to make the frequent stops and turns necessary to access the many park facilities and interpretive sites. In addition, the noise of existing traffic volumes encroaches upon the peaceful and solemn setting of the battlefield.

Visitor exposure to and understanding of the Second Battle of Manassas has continued to improve over the years especially with the additions of the Stuart's Hill and Brawner Farm tracts. Park staff has also enhanced interpretation of the battle via a separate auto tour route and the establishment of the Stuart's Hill Visitor Contact Station. However, the First Battle of Manassas still receives greater visitor attention due to the location of the Henry Hill Visitor Center near the main entrance to the park, the location of the visitor center on one of the main battle sites of First Manassas, and the difficulty of traversing the park roads due to the aforementioned traffic situation.

Park visitors would continue to have a good understanding of the two battles, but they would lack a comprehension of the overall importance of the two engagements within the context of the Civil War. In addition, they would not have an overview of the Civil War (i.e., the rationale for the War, the overall strategies of the two armies, and the factors that lead to the culmination of the conflict).

The existing condition of the historic landscape, which is noticeably different from the wartime era, would continue to influence visitor understanding of the battles.

Cumulative Impacts

The potential impacts on visitor experience is highly dependent on the corridor selected for each transportation project identified in the cumulative impact scenario. The Battlefield Bypass, I-66, and VA Route 234 Bypass North projects are expected to be close to, abut, or even in some cases, transverse park property depending on the alternate selected. These projects could have an adverse impact on the visitor experience from increased noise and changes to the viewshed. With proper planning and mitigation, the adverse impact on the visitor experience would be expected to be minor. In combination with the impacts of the no-action alternative, the cumulative impact would be moderate, long-term, and adverse.

Conclusion

Visitor experience and use continues to be adversely impacted by heavy volumes of commuter and commercial traffic. The interpretation of the two battles has improved substantially over the years, but visitor focus remains on First Manassas due to the location of the visitor center and the heavy volumes of non-park vehicles that inhibit viewing many of the Second Manassas sites. Park visitors would not have an understanding of the importance of the two battles in context of the Civil War or an overview of the Civil War in general. In addition, the failure to rehabilitate major components of the historic landscape to their wartime appearance would continue to hamper the visitor understanding of the battles. As a result of these factors, and primarily due to the conflicts between park visitors and non-park traffic, a major long-term adverse impact would occur to the visitor experience and use.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Visitor's exposure to and understanding of both battles of Manassas would be enhanced with the expansion of the Second Manassas Visitor Contact Station at Stuart's Hill (and eventually Brawner Farm), and the continued use of the Henry Hill Visitor Center. The interpretive materials at the Henry Hill Visitor Center would focus on the overall importance and strategy of the First Battle, while the Stuart's Hill facility would interpret the Second Battle. Reduced vehicular traffic in the park and improvements to the Stuart's Hill access road and parking lot would greatly facilitate use of and access to the Stuart's Hill contact station.

As a result, the Second Manassas automobile and bicycle tour route and hiking trails would receive greater levels of visitor use.

Correspondingly, those visitors interested in First Manassas would be able to focus on this battle and could follow the auto tour route created under this alternative. Visitors to both battle sites would be exposed to revised wayside exhibits that focus on the importance of each engagement and an overview of these important battles.

Visitor experience and use would be enhanced due to the removal of heavy volumes of commuter and commercial truck traffic from the park. Park visitors would be able to drive on the park roads at their own pace without being concerned about fast-moving non-park traffic. Visitors would be able to easily locate park facilities and key interpretive sites, and there would be substantially less noise due to reduced traffic volumes. The lower noise levels would be more compatible with the desired cultural and park land use.

The rehabilitation of the cultural landscape to the wartime era would greatly enhance the visitor understanding of the two Battles. Improved views to and from the battlefield would enable the visitor to better visualize the series of historic events that took place on the battlefields. The rehabilitation of the cultural

landscape would have a moderate long-term beneficial impact on the visitor experience. The loss of forested area would have negligible impacts on the visitor experience because the removed area represents a small portion of the park's forest.

The preservation and in some cases rehabilitation of historic structures and sites would ensure that the resources are preserved for future generations to enjoy. A moderate long-term beneficial impact on visitor experience would occur.

Improved access and parking as well as a new equestrian trail at Stuart's Hill would enhance the visitor experience.

Cumulative Impacts. The Battlefield Bypass, I-66 Study, Tri-County Parkway, and VA Route 234 Bypass North projects would increase regional mobility and help reduce traffic volumes in the park. Increased mobility and reduced delays to the park would improve the visitor experience. Under alternative B, the controlled access and other improvements would also increase the visitor experience by ensuring that traffic within the park is almost entirely composed of park visitors. Under alternative B, transportation improvements inside and outside the park would have a moderate beneficial cumulative impact on the visitor experience.

Conclusion. A major, long-term, beneficial impact would occur for visitor experience at Manassas National Battlefield Park from the implementation of alternative B. Visitor experience and use would be substantially improved from the removal of all commuter and commercial truck traffic from the portions of U.S. Route 29 and VA Route 234 that are within the park. Interpretation of the two battles as distinct military events would greatly enhance visitor understanding. Revising the wayside exhibits to focus on the importance of each engagement within the overall war and an overview of these important battles would also add to the visitors' knowledge. In addition, the rehabilitation of the cultural landscape to the wartime era and preservation of historic structures would greatly improve the visitor

understanding of the two battles. A moderate beneficial cumulative impact would occur for visitor experience.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Visitor exposure to and understanding of the Civil War, an overview of both battles, and the context of the battles in relationship to the Civil War would be enhanced with the new visitor center and revised interpretive media. The construction of the new visitor center would educate visitors about the overall causes of the Civil War, the strategies of the armies, and the approaches that resulted in the conclusion of the war. The impacts of the battles on local families, including African American families and communities, would be interpreted. At both battle sites, visitors would also be exposed to revised wayside exhibits that focus on the overview of these important engagements, their context in relationship to the battle, and the overall story of the Civil War. Thus, visitors would gain a much greater understanding of the Civil War and the impacts of the Battles of Manassas.

Visitor experience and use would be enhanced with the removal of heavy volumes of commuter and commercial truck traffic from the park and other transportation and circulation improvements. Park visitors would be able drive on park roads at their own pace without being concerned about fast-moving non-park traffic. They would be able to easily locate park facilities and key interpretative sites, and there would be substantially less noise associated with the lower traffic volumes. The lower noise levels would be more compatible with the desired cultural and park land use.

The development of important view corridors to key battlefield sites would enhance the visitor understanding of the two battles.

Preservation of all wartime structures would also facilitate comprehension of components of the engagements. Preservation, stabilization, and in some case rehabilitation would ensure

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that the resources are preserved for future generations to enjoy. A moderate long-term beneficial impact on the visitor experience would occur.

Improved access and parking as well as a new equestrian trail at Stuart's Hill would enhance the visitor experience.

Cumulative Impacts. The cumulative impact would be the same as described for alternative B. The Battlefield Bypass, I-66 Study, Tri-County Parkway, and VA Route 234 Bypass North projects would increase regional mobility and help reduce traffic volumes in the park. Increased mobility and reduced delays to the park would improve the visitor experience. Under alternative C, the controlled access and other improvements would also increase the visitor experience. The transportation improvements resulting in increased mobility in combination with eliminating commuter and commercial traffic would have a moderate,

beneficial, cumulative impact on the visitor experience.

Conclusion. A major, long-term, beneficial impact would occur for visitor experience at Manassas National Battlefield Park from the implementation of alternative C. The visitor experience would be substantially improved by the removal of all commuter and commercial traffic from the portions of U.S. Route 29 and VA Route 234 that are in the park. Visitor exposure to and understanding of the Civil War, an overview of both Battles, and the context of the battles in relationship to the Civil War would be enhanced with revised exhibits and interpretive media. In addition, the development of important view corridors to key battlefield sites and rehabilitation of historic sites would enhance the visitor understanding of the two battles. A moderate, beneficial, cumulative impact would occur for visitor experience.

IMPACTS ON PARK OPERATIONS AND MAINTENANCE

METHODOLOGY

For the purposes of this analysis, park operations refer to the quality and effectiveness of the infrastructure (such as maintenance areas, roads, administrative facilities, etc.) used to operate the park and the ability to maintain the park's infrastructure to protect and preserve vital resources and provide for an effective visitor experience. This includes an analysis of the condition and usefulness of the facilities and developed features used to support the operations of the park.

DEFINITION OF INTENSITY LEVELS

The thresholds of change for the intensity of impacts on park operations and maintenance are defined as follows:

- *Negligible*: Park operations would not be affected or the effect would be at low levels of detection and would not have an appreciable effect on park operations.
- *Minor*: Impacts would be detectable and would be of a magnitude that would not have an appreciable effect on park operations.
- *Moderate*: Impacts would be readily apparent and result in substantial change in park operations in a manner noticeable to the staff and public.
- *Major*: Impacts would be readily apparent, result in a substantial change in park operations in a manner noticeable to staff and the public, and would be marked different for recent operations.
- *Duration*: A short-term impact would last less than one year and would affect only one season's use by visitors. A long-term impact would last more than one year and would be more permanent in nature.

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION)

Under the No-Action, the level of staffing and the use of facilities at the park would not result in a noticeable change. Recent traffic levels

within the park would adversely affect park operation because of delays during peak hours along U.S. Route 29 and VA Route 234, and at their intersection. This impact would be minor, long-term, and adverse.

Cumulative Impact

No other projects within the cumulative impact scenario were identified that would have an adverse impact on park operations and maintenance; therefore, no cumulative impact would occur.

Conclusion

A negligible, long-term, adverse impact would occur for park operations. No cumulative impact would occur.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Under alternative B, the National Park Service would update the interpretive displays, exhibits, programs, and orientation at the Henry Hill Visitor Center to focus on the story of First Manassas. The National Park Service would upgrade and expand the Stuart's Hill facility to serve as the Second Manassas Visitor Contact Station. This upgrade would entail full staffing of the facility, as well as creation of new exhibits and interpretive programs to tell the story of Second Manassas.

The updated interpretive materials and associated refocus of interpretive efforts at each visitor facility would require a minor, short-term change in level of staff effort for implementation of the concepts. It would be anticipated that the change would occur gradually over time or additional support or funding would become available to minimize the impacts on the recent park operations. The Second Manassas Visitor Contact Station would require added maintenance, protection, and interpretation. The long-term impact on park operations would be minor and adverse.

Under alternative B, the controlled access into the park and the change in ownership of the portions of U.S. Route 29 and VA Route 234 in the park would have an adverse impact on park operations. One of the concepts for controlling access at the entry points to the park includes entrance gates staffed by a park employee. Currently, the park does not have staff identified or available to fill these posts. However, entrance gates would allow the park to collect entry fees, which in turn could support these new positions.

Currently, visitors can enter the park and view many resources without stopping to pay in the visitor center. With controlled access, park operations would change, although it is anticipated that the park would collect more revenue from visitation. The National Park Service would have to commit additional staff and funding to maintain the newly acquired roads within the park. Alternative B would have a moderate long-term adverse impact on park operations and would result in a long-term change in park operations.

Cumulative Impact. No other projects within the cumulative impact scenario were identified that would have an adverse impact on park operations and maintenance; therefore, no cumulative impact would occur.

Conclusion. Alternative B would have a minor, long-term, adverse impact on park operations and maintenance due to changed operations associated with expanded visitor services at Stuart's Hill, new interpretive programs, change in ownership of the roads, and controlled access into the park. No cumulative impact would occur.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Under alternative C, the National Park Service would relocate the visitor center off Henry Hill and would construct a new visitor center to service the park. The visitor center would have interpretive displays, exhibits, programs, and orientation focused on the Comprehensive Story of the Civil War. The changed and added interpretive materials and the accompanying

refocus of park programs would require a minor, short-term change in level of staff effort for implementation of the concepts. It would be anticipated that the change would occur gradually over time or additional support would become available to minimize the impacts on the recent park operations. The long-term impact on park operations and maintenance would be minor and adverse.

Under alternative C, the controlled access into the park and the change in ownership of the roads would have an adverse impact on park operations. One of the concepts for controlling access at the entry points to the park is entrance gates serviced by a park employee. Currently, the park does not have staff identified or available to service these posts. However, entrance gates would allow the park to collect entry fees, which in turn could support these new positions.

Currently, visitors can enter the park and view many resources without stopping to pay in the visitor center. With controlled access, park operations would change although it is anticipated that the park would collect more revenue from visitation into the park. With the change in ownership of the roads, the National Park Service would have to commit staff and funding to maintain the roads within the park. Alternative C would have a moderate long-term adverse impact on park operation and would result in a long-term change in park operations.

Cumulative Impact

No other projects within the cumulative impact scenario were identified that would have an adverse impact on park operations and maintenance; therefore, no cumulative impact would occur.

Conclusion

Alternative C would have a minor long-term adverse impact on park operations and maintenance because of change in operations associated with the new visitor center, new interpretive programs, park acquisition of U.S. Route 29 and VA Route 234, and controlled access into the park. No cumulative impact would occur.

UNAVOIDABLE ADVERSE IMPACTS

ALTERNATIVE A—CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION ALTERNATIVE)

Visitor safety and experience continues to be seriously compromised by heavy volumes of commuter and commercial truck traffic. The interpretation of the two Battles has improved substantially over the years, but visitor focus remains on First Manassas due to the location of the visitor center, the content of its interpretive programs, and the heavy volumes of non-park traffic that inhibits viewing many of the Second Manassas sites. In addition, the failure to rehabilitate major components of the historic landscape to their wartime appearance continues to prevent visitors from understanding the comprehensive story of the Battles.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS

The scene rehabilitation would have unavoidable, long-term, adverse impact on the net area of woodlands at the park, but is necessary to rehabilitate the battlefield

landscape. Controlled access into the park would have unavoidable adverse impacts on commuters and nearby businesses and residents that use the road to transport goods and services.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

The construction of a new visitor to the east of Stone Bridge would have an unavoidable adverse impact on vegetation. The new bridge and access road associated with the new visitor center would have to cross Bull Run, and would have unavoidable adverse impacts to water resources. Additional study would be conducted to further refine the alternatives and potential impacts. There would be a small decrease in the overall woodlands within the park due to historic landscape rehabilitation. Net loss of woodlands would result in negligible to minor adverse impacts on forest species. Controlled access into the park would have unavoidable adverse impacts on commuters and nearby businesses that use the road to transport goods and services.

RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

ALTERNATIVE A—NO-ACTION ALTERNATIVE

Under the no-action alternative, there would be no short-term use of the environment that would encroach upon the maintenance and enhancement of long-term productivity.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Under alternative B, there would be a net loss of 245 acres of woodlands and a concomitant net gain of open fields due to historic landscape rehabilitation. The scene rehabilitation would greatly enhance the visitor understanding of the two battles. However, there would be a negligible to minor, long-term loss of biological productivity from the loss of forest.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Under the proposed action, there would be the loss of approximately 72 acres of woodlands and a concomitant net gain of open fields due to historic landscape rehabilitation. The scene rehabilitation would greatly enhance the visitor understanding of the two battles. However, there would be a negligible, long-term loss of biological productivity from the loss of forest. In addition, the construction of a new visitor center would involve land disturbance and impacts to vegetation which would reduce biological productivity but would enhance the visitor's understanding of the Civil War, adding long-term productivity to the battlefield resource.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

ALTERNATIVE A—NO-ACTION ALTERNATIVE

There would be no irreversible and irretrievable commitment of resources.

ALTERNATIVE B—THE TWO BATTLES OF MANASSAS (PREFERRED ALTERNATIVE)

Alternative B has certain proposed actions that would result in irreversible commitment of resources. The battlefield scene rehabilitation would have an irreversible commitment of resources to remove the forest and rehabilitate the scene. The removal of the U.S. Route 29 bridge over Bull Run would also be an irreversible commitment of resources.

ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS

Alternative C has certain proposed actions that would result in irreversible commitment of resources. The construction of a new visitor center east of Stone Bridge, with a new access road and bridge over Bull Run would be an irreversible commitment of resources. The battlefield scene rehabilitation would also have an irretrievable commitment of resources to remove the forest and rehabilitate the scene although it would be less than alternative B.

Consultation & Coordination



PUBLIC MEETINGS, SECTION 106 CONSULTATION, AND INTERAGENCY COORDINATION

PUBLIC MEETINGS

This *Draft General Management Plan/ Environmental Impact Statement* was developed with the participation of governmental agencies, nongovernmental organizations, and members of the public at large. Formal public participation began in March of 1996, when the park superintendent sent a letter to more than 800 people and groups on the park's initial mailing list. This letter described the effort to develop a new general management plan for the park and invited all addressees to participate in the project.

The invitation announced the first round of public meetings, to be held at the visitor center on March 18 and 20, 1996, and also included a mail-back comment form. The comment form asked recipients to describe any issues and concerns they had about the park, as well as their ideas for the future of the battlefields. The letter was also posted on the park's World Wide Web site and electronic comments were encouraged. In addition, the meetings were announced in local newspapers, on local television, and in the *Federal Register*

The first public meetings provided attendees with the opportunity to learn about the planning effort, ask questions, and voice their ideas about the park. The mail-back comment form was also distributed at the public meetings. More than 100 people attended the meetings and more than 250 comment forms and electronic responses were received.

Additional informal meetings were also held during this first round of public participation. The project was discussed with groups associated with the park, including the Bull Run Civil War Roundtable and the Battlefield Equestrian Society. The project team also met with groups that expressed interest in specific aspects of the plan, such as the Prince William Bicycle Association, the Friends of Manassas National Battlefield Park, and the Prince William Wildflower Society.

From the meetings and comment forms, the project team learned that respondents cared deeply about the battlefields and were concerned with almost every aspect of the park, including traffic, trails, adjacent development, historic buildings, visitor facilities, interpretation, the natural environment, partnerships, the historic scene, and recreational uses.

The responses, along with the results of the park's data gathering study, provided a range of major issues facing the future of the park. The project team next reviewed past congressional legislation that shaped the park and examined the important battlefield resources and stories. Collectively, this information helped the project team develop goals for the park's future and preliminary alternatives to achieve those goals.

To help communicate ongoing planning issues, and to encourage further public participation, a newsletter was sent to individuals and organizations on the park mailing list, as well as anyone else who expressed interest in the process. The first newsletter, sent in January 1997, re-stated the preliminary goals and alternatives, to make sure they addressed the ideas discussed during the first round of public participation.

On February 10 and 11, 1997, a second round of public meetings was held at the park visitor center. As with the first round of public meetings, the meetings were publicized in local papers and the newsletter and meeting announcement were posted on the park's World Wide Web page. An article was also included in the *Civil War News* to encourage participation by a broader segment of the Civil War community. At the meetings, participants were invited to give their reactions to the goals and help the planning team refine the preliminary alternatives and/or develop new alternatives. Ideas from these meetings and the responses were used to refine the preliminary alternatives and develop the draft plan.

Throughout the summer of 1997 as the draft general management plan was being prepared, the project team continued to meet with interested groups and study the impacts of implementing the alternatives. The National Park Service contracted with Virginia Natural Heritage to study those areas identified in the alternatives where wooded areas would be removed and the historic field patterns rehabilitated to ensure threatened and endangered species would not be impacted. The National Park Service also contracted with Robert Peccia and Associates, to supplement the traffic modeling provided by the Virginia Department of Transportation in the U.S. Route 29 Study to understand the impacts of relocating through traffic from the park.

In 2000, the National Park Service put the Manassas General Management Plan process on hold, in order to first concentrate on separate, but related, transportation concerns. Of specific interest was the Battlefield Bypass, which would re-route US Route 29 and VA Route 234 around the park, removing commuter traffic from these roads within park boundaries. The Environmental Impact Study for the bypass began in 2001, and a preferred alternative was selected in 2005.

Public meetings for the Manassas National Battlefield GMP resumed in 2002 with a public focus group meeting, designed specifically to address issues surrounding transportation and circulation in the park. This meeting occurred on December 5, 2002, with 18 individuals in attendance. A new newsletter was sent to the mailing list in the fall of 2003. A total of 60 written and electronic comments were received.

SECTION 106 CONSULTATION

Agencies that have direct or indirect jurisdiction over historic properties are required by section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470, et seq.) to take into account the effect of any undertaking on properties eligible

for the National Register of Historic Places. To meet the requirements of 36 CFR 800, the National Park Service sent letters to the Virginia Department of Historic Resources (the state historic preservation office) and the Advisory Council on Historic Preservation, inviting their participation in the planning process. Both offices were sent copies of all project newsletters with a request for comments.

Table 5.1 lists the cultural resources present at Manassas National Battlefield Park, the treatment and use of each resource, and the presumed need for any future review by the SHPO and/or the Advisory Council on Historic Preservation.

INTERAGENCY COORDINATION

Coordination with federal, state, and local government agencies began concurrently with the public information campaign. Government agencies such as the Virginia Department of Historic Resources, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, Virginia Department of Transportation, Virginia Department of Conservation and Recreation, and nearby jurisdictions received the park superintendent's initial letter in March of 1996.

These organizations were invited to attend all public meetings. Special briefings were also held with elected officials and staff from Fairfax and Prince William counties. Throughout the process (from 1996 through the present), government agencies were also invited to participate in a routine series of interagency coordination meetings. The attached letter to the Virginia Department of Historic Resources is one example of the project team's coordination efforts.

In addition, representatives from the park's General Management Plan/Environmental Impact Statement team participated in coordination meetings for the Bypass Study.

Table 5-1: GMP Actions Requiring Section 106 Compliance

Alternative A	
GMP Action	Compliance Requirements
Rehabilitate Brawner Farm House, while preserving the structure to accommodate internal visitation and interpretation.	Project underway.
Alternative B	
GMP Action	Compliance Requirements
Upgrade the Stuart's Hill facility to serve as the Second Manassas Visitor Contact Station and accommodate year-round visitation	Requires further SHPO and ACHP review.
Request the following boundary adjustments: <ul style="list-style-type: none"> • The 136-acre Davis Tract, • The 43-acre Stonewall Memory Garden Tract, • The 24.25 acre Conservation Trust parcel, and • The 6-acre Dunklin Monument tract 	No SHPO or ACHP review required.
Rehabilitate the landscape to its wartime appearance: <ul style="list-style-type: none"> • Remove approximately 327 acres of existing forest and manage that land as grassland or open field. • Allow approximately 82 acres of existing grassland and open fields to regenerate to forest through natural succession. 	Requires further SHPO and ACHP review.
Remove the existing Brawner Farm and Battery Heights parking areas along U.S. Route 29.	Requires further SHPO and ACHP review.
Develop the First Manassas Automobile/Bicycle tour (interpretive materials only—no new roadway needed).	No SHPO or ACHP review required. To be carried out after the completion of the Manassas National Battlefield Park Bypass.
Upgrade trails and interpretive media as needed on the First Manassas Hiking Trail.	Requires further SHPO and ACHP review.
Develop the Second Manassas Automobile/Bicycle tour (interpretive materials only—no new roadway needed).	No SHPO or ACHP review required. To be carried out after the completion of the Manassas National Battlefield Park Bypass.
Develop the Second Manassas Hiking trail by upgrading existing trails, creating new trails, and providing interpretive materials.	Requires further SHPO and ACHP review.
Upgrade the Lucinda Dogan House to accommodate year-round visitation Rehabilitate the structure's appearance by removing nonconforming structural elements and outbuildings.	Requires further SHPO and ACHP review.
Create a "ghosted" outline of the Robinson House ruins.	Requires further SHPO and ACHP review.

Table 5-1: GMP Actions Requiring Section 106 Compliance

Alternative B (Continued)	
GMP Action	Compliance Requirements
<p>Transfer the portions of U.S. Route 29 and VA Route 234 inside the park to NPS jurisdiction and close these roads to non-park traffic:</p> <ul style="list-style-type: none"> ● Remove the existing U.S. Route 29 Bridge over Bull Run ● Install access control facilities at the park's remaining entrances along U.S. Route 29 and VA Route 234. Special provisions would be made for in-holders and their guests and service providers, and for emergency vehicles ● Remove signalization, turn lanes, and excess pavement from the intersection of U.S. Route 29 and VA Route 234 ● Reduce speed limits to 25 mph ● Designate and mark bicycle lanes on primary roads throughout the park 	<p>Requires further SHPO and ACHP review. To be carried out after the completion of the Manassas National Battlefield Park Bypass.</p>
<p>Design and develop a new recreation area off of Groveton Road.</p>	<p>Requires further SHPO and ACHP review.</p>
<p>Develop a new equestrian trail near Stuart's Hill.</p>	<p>Requires further SHPO and ACHP review.</p>
Alternative C	
GMP Action	Compliance Requirements
<p>Construct a new visitor center, parking area, and access roadways to the east of Stone Bridge and Bull Run.</p>	<p>Requires further SHPO and ACHP review.</p>
<p>Remove the existing visitor center Henry Hill</p>	<p>Requires further SHPO and ACHP review.</p>
<p>Upgrade the interpretive displays at the Stuart's Hill facility (a less extensive upgrade than in Alternative B). Examine options to re-design the entry road and parking facilities at Stuart's Hill to minimize the visual impact of the high-voltage transmission lines in that quadrant of the park.</p>	<p>Requires further SHPO and ACHP review.</p>
<p>Request the following boundary adjustments:</p> <ul style="list-style-type: none"> ● The 136-acre Davis Tract ● The 43-acre Stonewall Memory Garden Tract ● The 24.25 acre Conservation Trust parcel ● The 6-acre Dunklin Monument tract 	<p>No SHPO or ACHP review required.</p>
<p>Upgrade key interpretive sites throughout the park for moderate to high visitor use. Sites include: Brawner Farm, Chinn Ridge, Deep Cut/Unfinished Railroad, Groveton, Henry Hill, Matthews Hill, Portici, Sudley, Stone Bridge, and Stone House.</p> <ul style="list-style-type: none"> ● Develop extensive interpretive materials at each site. ● Upgrade parking facilities and loop trails at each site. 	<p>Requires further SHPO and ACHP review.</p>

Table 5-1: GMP Actions Requiring Section 106 Compliance

Alternative C (Continued)	
GMP Action	Compliance Requirements
Using existing trails, develop two separate five-mile hiking trails for the First and Second Battles of Manassas.	No SHPO or ACHP review required.
Restore important wartime view corridors by removing approximately 72 acres of existing forest and managing that land as grassland or open field.	Requires further SHPO and ACHP review.
Remove the modern residence and outbuildings from the Groveton area.	Requires further SHPO and ACHP review.
Upgrade the Lucinda Dogan House to accommodate year-round visitation Rehabilitate the structure's appearance by removing nonconforming structural elements and outbuildings.	Requires further SHPO and ACHP review.
Remove the existing Brawner Farm and Battery Heights parking areas along U.S. Route 29	Requires further SHPO and ACHP review.
Transfer the portions of U.S. Route 29 and VA Route 234 to NPS jurisdiction and close these roads to non-park traffic: <ul style="list-style-type: none"> ● Construct a new bridge and approach roads to the south of the existing bridge's location. ● Remove the existing U.S. Route 29 Bridge over Bull Run ● Install access control facilities at the park's remaining entrances along U.S. Route 29 and VA Route 234. Special provisions would be made for in-holders and their guests and service providers, and for emergency vehicles. ● Remove signalization, turn lanes, and excess pavement from the intersection of U.S. Route 29 and VA Route 234. ● Reduce speed limits to 25 mph. ● Designate and mark bicycle lanes on primary roads throughout the park. 	Requires further SHPO and ACHP review. To be carried out after the completion of the Manassas National Battlefield Park Bypass.
Design and develop a new recreation area off of Groveton Road.	Requires further SHPO and ACHP review.
Develop a new equestrian trail near Stuart's Hill.	Requires further SHPO and ACHP review.



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

Manassas National Battlefield Park
12521 Lee Highway
Manassas, Virginia 20109-2005

August 11, 2004

Ms. Kathleen S. Kilpatrick, Director
Department of Historic Resources
Commonwealth of Virginia
2801 Kensington Avenue
Richmond, Virginia 23221-2470

Subject: General Management Plan for Manassas National Battlefield Park, Virginia

Dear Ms. Kilpatrick:

The National Park Service continues to work toward the completion of a draft General Management Plan/Environmental Impact Statement (GMP/EIS) for Manassas National Battlefield Park. A general management plan, as you know, determines the best course of management for each park, based on the park's purpose and significance, the interrelationships that exist among the park's resources and values, the range of public interests, knowledge of best practices, and other factors. This approach helps ensure that the decisions made through general management planning are widely supported and sustainable over time. The draft GMP/EIS being developed for Manassas National Battlefield Park will guide decision making at the park for the next 15-20 years.

To date, the park's draft GMP/EIS contains three alternatives, including a no-action alternative. These are Alternative A, *Continuing Current Management Practices*, which is the no-action alternative; Alternative B, *The Two Battles of Manassas – A Comprehensive Understanding of Each Battle*, which is the alternative preferred by the National Park Service; and Alternative C, *The Defining Moments of the Battles – An Understanding of the Principal Events*. Later this year, a copy of the document will be submitted to you for your review and comment, in accordance with stipulation VI., E of the 1995 *Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers*.

Your comments and concerns are important in determining the future of Manassas National Battlefield Park. Because this general management plan has been under development for several years, I would be happy to arrange a time for you and members of your staff to tour the park and become reacquainted with the many issues affecting the park. If you would like to arrange such a meeting, or if you have any questions or concerns, please contact me at the above address, e-mail me at Robert_Sutton@nps.gov, or telephone me at 703-754-1861.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert K. Sutton".

Robert K. Sutton
Superintendent

LIST OF AGENCIES AND ORGANIZATIONS TO WHICH THIS DOCUMENT WAS SENT

Federal Agencies

Advisory Council on Historic Preservation
Federal Highway Administration
Federal Transit Administration
U.S. Army Corps of Engineers, Norfolk District
U.S. Department of Agriculture
 Natural Resources Conservation Service
 U.S. Forest Service
U.S. Department of Commerce
 National Oceanic & Atmospheric Administration, National Marine Fisheries Service, Northeast Region
U.S. Department of the Interior
 Fish and Wildlife Service, Virginia Field Office
 National Park Service
 Office of Environmental Policy and Compliance
 Office of Environmental Project Review
U.S. Environmental Protection Agency

U.S. Senate

Honorable Mr. George Allen
Honorable Mr. John Warner

U.S. House of Representatives

Honorable Mr. Tom Davis
Honorable Mr. Frank Wolf

State Officials

Virginia Governor Mark Warner
State Senator Charles Colgan
Virginia State Delegate Robert Marshall

State Agencies

Virginia Department of Aviation
Virginia Department of Environmental Quality
Virginia Department of Forestry
Virginia Department of Game and Inland Fisheries
Virginia Department of Historic Resources (State Historic Preservation Office)

Virginia Department of Transportation
Virginia Marine Resources Commission
Virginia Outdoor Foundation

Regional Agencies and Organizations

National Capital Planning Commission
Northern Virginia Regional Commission
Northern Virginia Regional Park Authority
Northern Virginia Soil and Water Conservation District
Northern Virginia Transportation Authority

County and Local Agencies and Officials

Fauquier County Administrator
Fairfax County
 Board of Supervisors
 Department of Planning and Zoning
 Department of Transportation
Loudoun County
 Administrator
 Board of Supervisors
 Director of Transportation
Prince William County
 Board of Supervisors
 Department of Public Works
 Soil and Water Conservation District
 Transportation Division
Manassas, Virginia, local government
Manassas Park, Virginia, local government
Town of Haymarket, local government

Organizations and Businesses

Bull Run Civil War Roundtable
Civil War Preservation Trust
Coalition for Smarter Growth
Gate Post Estates Home Owners Association
National Trust for Historic Preservation
Piedmont Environmental Council
Sudley Springs-Catharpin Civic Association