

# 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 Manassas National Battlefield Park. This chapter describes the potential impacts associated with the 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.

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, Director's Order #12, the NPS' *Management Policies*, and other regulations. 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 regional), direct versus indirect, duration (short-term or long-term), and intensity (negligible, minor, moderate, or major). Clarification of each of these concepts is provided below.

### 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 a 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 difference involves the removal of vegetation (direct impact), which would cause soil erosion and sedimentation, thus affecting the water quality (indirect impact) of a nearby waterway.

### Impairment to Park Resources and Values

The NPS' *Management Policies* require analysis of potential effects to determine whether actions would impair park resources. NPS managers must always seek ways to avoid or minimize, to the greatest degree practicable, adversely impacting park resources and values.

Laws regarding the management of national park system units 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. 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 on 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 NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made for most impact topics, consistent with Sections 1.4.5 and 1.4.7.1 of the NPS' *Management Policies*. A determination of impairment is not required for visitor experience (unless the impact is resource-based), transportation, socioeconomics, and park operations.

### Cumulative Impacts

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act, require 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 *Code of Federal Regulations* 1508.7). Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic analysis.

Cumulative impacts are evaluated in a regional context, which varies by 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 occurring 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 this *General Management Plan*. A brief overview of other ongoing or past studies and pending projects 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 (Battlefield Bypass Study)***

U.S. Route 29 and VA Route 234 transect the Manassas National Battlefield Park. The volume of commuter traffic that uses these roads has resulted in traffic safety and congestion problems, adverse 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 Battlefield Bypass study described in the “Purpose of and Need for the Plan” section. The Battlefield 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 leading to the preparation of an environmental impact statement. These include, but are not limited to, traffic modeling and evaluations, cultural resource evaluations, socioeconomic evaluations, natural resource evaluations, and alternatives development.

The Manassas National Battlefield Park Amendments of 1988 and Federal Highway Administration policy required the Prince William and Fairfax County Boards of Supervisors and the Commonwealth Transportation Board to approve a bypass alternative. All of these entities approved Alternative D, modified. The Federal Highway

Administration and National Park Service are preparing a final environmental impact statement and record of decision.

Approval of the Battlefield Bypass by the Commonwealth Transportation Board was contingent on the mitigation of traffic impacts resulting from the closure of U.S. Route 29 and VA Route 234 within the park. The Board’s concerns included the impact on emergency access if the bridge over Bull Run on U.S. Route 29 was removed.

To address this concern, the preferred alternative was modified. The modern highway bridge on U.S. Route 29 would be removed, and a new bridge would be constructed south of the existing bridge in a location with fewer adverse impacts on the cultural landscape, visitor experience, and interpretation. A detailed discussion of the changes to alternative B has been incorporated into the chapter of this document entitled “Alternatives including the Preferred Alternative.” The environmental impacts and costs of the new access road and bridge are addressed in this document (see the “Environmental Consequences” section and appendix D) because these facilities would be within park boundaries. However, because these changes are related to mitigation measures associated with the Battlefield Bypass study, implementation of these actions would occur in conjunction with the development of the Battlefield Bypass. Further information on the Battlefield Bypass can be found on the Internet 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 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 on the Internet at <http://www.infoi66.com>.

***Tri-County Parkway Location Study and 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.

On November 17, 2005, the Commonwealth Transportation Board approved the “West 2” alignment for the Tri-County Parkway. This alignment runs essentially parallel to the Battlefield Bypass Alternative D, modified, along the west side of the battlefield.

Now that the Commonwealth Transportation Board has selected an alternative for the Tri-County Parkway west of the park, Virginia Department of Transportation, National Park Service, and Federal Highway Administration

are working closely to design one roadway from I-66 to VA Route 234 north of the park that will accommodate the bypass and the Tri-County Parkway within one right-of-way.

***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 environmental impact statement for this project, budgetary and other concerns forced the Virginia Department of Transportation 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 near Washington-Dulles International Airport.

## IMPACTS ON THE NATURAL ENVIRONMENT

### AIR QUALITY

#### Methodology

The impact assessment for air quality focused on changes to the levels of air emission from the proposed actions under each alternative. The analysis also considered the physical impacts associated with any new developmental plans and anticipated visitor uses. The context of the evaluation was Manassas National Battlefield 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 Battlefield 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 that do not include a stop in the park.

#### 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 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 ability to comply

with National Ambient Air Quality Standards.

- *Major*: The impact is severe and highly noticeable. The impact would have an effect on the 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 any 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 be expected 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 to Manassas National Battlefield Park have the potential to produce short-term adverse impacts on air quality from fugitive dust and emissions during construction. In the long term, the air quality impacts depend 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

Manassas National Battlefield Park. This would occur 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 shorter 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 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)**

Removal to the bridge over Bull Run on U.S. Route 29, the construction of a new bridge and access road, other construction-related activities associated with improving visitor services, and landscape rehabilitation 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. This impact would be short-term and 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 time.

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 limited in areal extent and because best management practices (such as watering and seeding for erosion control) would be implemented to reduce construction-related impacts.

Closure of roads through the park to heavy commuter traffic would result in a long-term negligible improvement in local air quality along those road corridors within the park. Rerouted traffic would contribute to emissions along roads outside the park. Emissions outside park boundaries are considered as part of the Battlefield Bypass study. The redistribution of vehicular traffic would not be expected to have an adverse impact on any jurisdiction'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 is being evaluated as part of the Battlefield Bypass study, but this impact on air quality is anticipated to be minor long-term and adverse.

**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 the 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 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 Battlefield Bypass study and the Tri-County Parkway study. The cumulative impact depends on the final route selection. However, the impact is likely to be minor long-term and adverse; therefore, the overall cumulative impact would likely be minor.

**Conclusion.** Negligible to minor short-term adverse impacts to air quality in the park would occur periodically during construction activities and landscape rehabilitation. 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, a negligible beneficial impact. 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 Battlefield Bypass study. This long-term 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 Henry Hill to a new location to the southeast 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 negligible to minor adverse impacts on air quality because the projects are small in areal extent and best management practices (such as watering and seeding for erosion control) would be implemented to reduce construction-related impacts.

The type of impacts for forest removal operations would be similar to those described under alternative B, although the extent of forest removal 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 time.

Closure of roads through the park to heavy commuter traffic would result in a long-term negligible improvement in local air quality along those road corridors within the park. Rerouted traffic would contribute to emissions along roads outside the park, which is being considered as part of the Battlefield 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.

**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 Battlefield Bypass study and the Tri-County Parkway Study. The cumulative impact depends on the final route selection. 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 and landscape rehabilitation 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 negligible 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 Battlefield Bypass study. This long-term impact is anticipated to be adverse and minor. Cumulative impacts 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.

## SOUNDSCAPE

### Methodology

The NPS' *Management Policies* state 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 *Management Policies* requires the rehabilitation of degraded soundscapes to the natural condition whenever possible, and the protection of natural soundscapes from degradation because of 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*, Section 4.9).

Noise can adversely affect park resources by modifying or intruding on 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 on 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 the NPS' *Management Policies* and Director's Order #47, *Soundscape Preservation and Noise Management*.

### Definition of Intensity Levels

Analyses of the potential intensity levels of impacts on the soundscape 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 Route 234 would remain open to commuter and commercial traffic through 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 tranquil, peaceful, and still. 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 were 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 projects 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 impacts 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)**

Removal of the bridge over Bull Run on U.S. Route 29, the construction of the new bridge and access, and other 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 tranquil, peaceful, and still, 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 likely have a moderate adverse impact on noise outside the park; however, the

intensity of the impact would depend on the route selected. Noise-associated impacts outside the park are being considered as part of the environmental review for the Battlefield Bypass study.

There would be an adverse localized 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 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 were 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. Negligible to minor short-term adverse impacts on the soundscape would occur during construction activities to upgrade visitor services areas and during forest removal operations. Only short-term minor 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 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 tranquil, peaceful, and still, 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 impact on the soundscape caused during the forest removal. This impact would be negligible to minor 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 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 were 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 because of 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. Negligible to minor short-term adverse impacts on the soundscape would occur during construction activities to upgrade the visitor services areas and implement 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 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 and 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 staff 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)**

Changes at the Second Manassas visitor contact station, and the proposed new access road and improved parking area at Stuart's Hill would have minor short-term and long-term adverse impact on vegetation and wildlife because some trees would be removed and some wildlife would be temporarily displaced during construction. Additional environmental evaluations and field studies would be required for implementation. The impact on vegetation and wildlife would be long-term adverse and minor because of the potential removal of vegetation for the new road and improved 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. There would be beneficial impacts to vegetation from rehabilitation of the existing roadbed.

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.

The proposed access road and bridge would require the destruction of wildlife habitat, removal of vegetation, and displacement of some wildlife species. The degree of impact depends on the future location of the road and bridge; however there is no location along the Bull Run stream valley where total avoidance of impacts to forested area, wetlands, and wildlife habitat could occur. The long-term adverse impacts associated with the new access road and bridge would be moderate.

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 #12, and the NPS' *Management Policies*.

Diversion of traffic and changes in traffic levels on other roads outside the park are being considered in the Battlefield Bypass study. At the time of this evaluation, the potential effects on wildlife of closing the roads outside the park are uncertain, because many 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 long-term 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 pine, 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 methods, potentially including mechanical methods and 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.

Rehabilitation of the historic landscape would benefit some species of migratory birds and adversely 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 small mammals, such as mice and voles, and birds, including the prairie warbler, field sparrow, and several species of hawks.

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 impact area-sensitive, forest-interior 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.

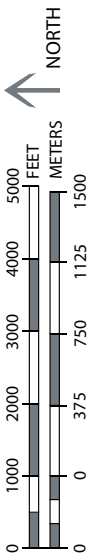
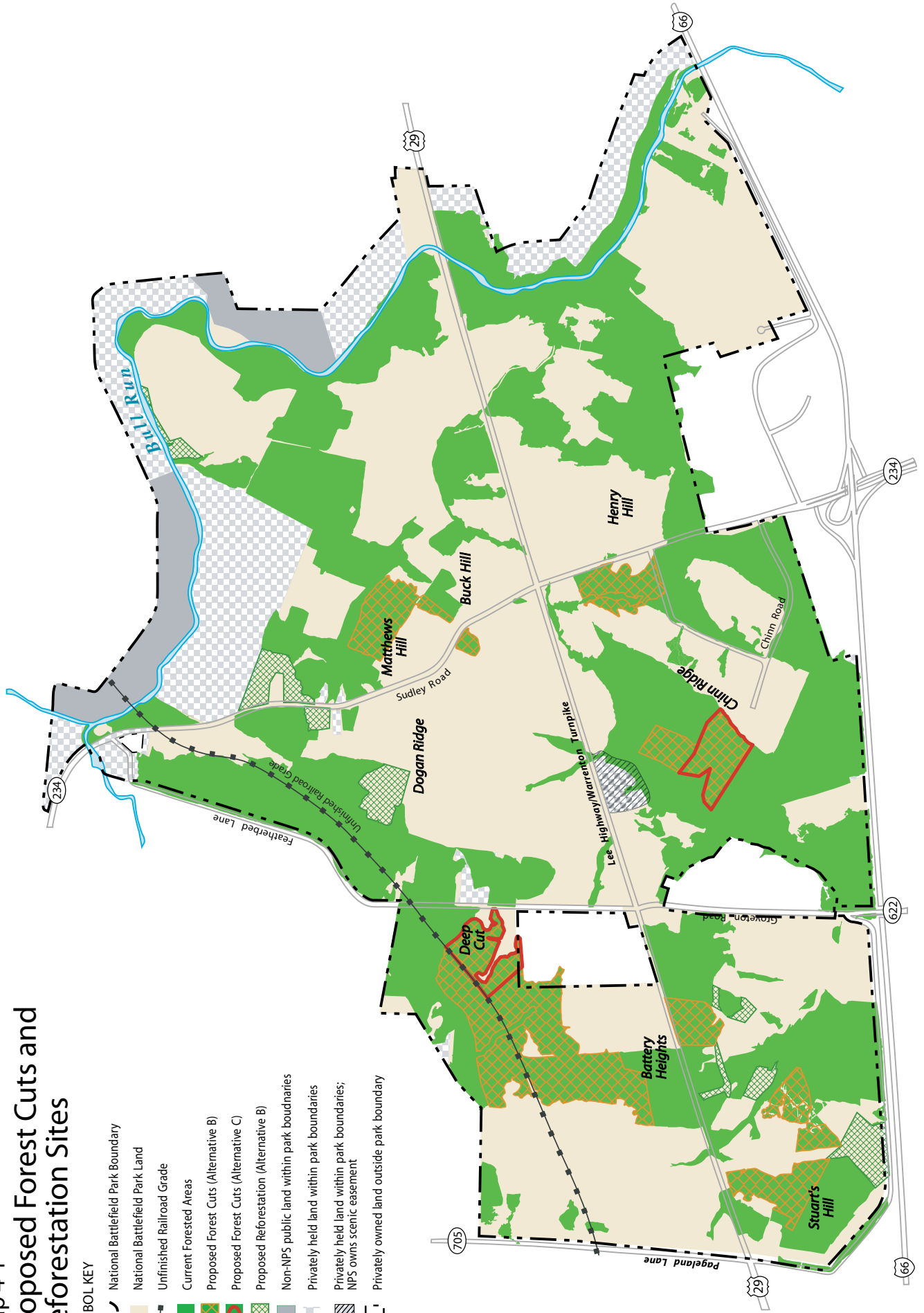
Overall, the reduction of woodlands by mechanical methods or with prescribed fire would result in a minor change in the area of vegetative or wildlife communities within the park as a whole. However, based on the anticipated acreage of woodland cleared,



# 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





minor long-term adverse impacts would occur from the disruption of the habitat.

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.

Studies support the finding that grasslands are declining at higher rates than forested lands. In Virginia, open, idle grasslands have been reduced by 55 percent 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.

**Conclusion.** Vegetation and wildlife would experience both beneficial and adverse impacts, relating to habitat modifications and

changes in traffic patterns in the park. Specifically,

- The impact on vegetation and wildlife at Stuart's Hill would be long-term adverse and minor because of the potential removal of vegetation to construct the road and improve parking. There would be beneficial impacts to vegetation from rehabilitation of the existing roadbed.
- The reduction of traffic and travel speeds would reduce the number of animals killed by vehicles, which would be a minor long-term beneficial impact.
- The long-term adverse impacts associated with the new access road and bridge on U.S. Route 29 would be moderate.
- Potential long-term adverse impacts to wildlife from diversion of traffic and changes in traffic levels on other roads outside the park would likely range from negligible to minor.
- The reduction of woodlands would have a minor long-term adverse impact on forest species and a minor long-term beneficial impact on species that prefer grasslands and edge habitats.
- Collectively, the cumulative impact would be minor to moderate long-term and adverse.

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 would depend 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 #12, and the NPS' *Management Policies*. Removal of the Henry Hill visitor center would allow rehabilitation of that area, most likely to open fields that would reflect the historic landscape. This would result in a negligible long-term beneficial impact on species that use grassland habitats.

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.

Diversion of traffic and changes in traffic levels on other roads outside the park are being considered in the Battlefield Bypass study. At the time of this evaluation, the potential effects on wildlife of closing the roads outside the park are uncertain, because many variables 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 long-term adverse impacts to wildlife would likely range from negligible to minor.

The proposed new access road and improved parking area at Stuart's Hill would have minor short-term and long-term adverse impact on vegetation and wildlife because some trees would be removed and some wildlife would be temporarily displaced during construction. Additional environmental evaluations and field studies would be required for implementation. The impact on vegetation and wildlife would be long-term adverse and minor because of the potential removal of vegetation for the new road and improved 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. There would be beneficial impacts to vegetation from rehabilitation of the existing roadbed.

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 methods, potentially including mechanical methods and prescribed fire.

Overall, the reduction of woodlands by mechanical methods or with prescribed fire would have a negligible to 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, negligible to minor long-term adverse impacts would occur from the disruption of the habitat.

**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.

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 percent since 1945 (Franzreb, K. E. and K. V. Rosenberg 1997). The conversion from forest to grassland would help to offset the impacts of forest removal. The small scale of this removal (72 acres, or less than 5 percent of the park's forested area) would be only somewhat noticeable within the park itself. The value of the newly created grasslands would be such that the overall long-term regional impacts to vegetation and wildlife would be minor.

**Conclusion.** Vegetation and wildlife would experience both beneficial and adverse impacts, relating to habitat modifications and changes in traffic patterns in the park. Specifically,

- The long-term adverse impacts associated with the new visitor center, access road, and bridge would be moderate.
- The reduction of traffic and travel speeds would reduce the number of animals killed by vehicles, which would be a minor long-term beneficial impact.
- Potential long-term adverse impacts to wildlife from diversion of traffic and changes in traffic levels on other roads outside the park would likely range from negligible to minor.

- The impact on vegetation and wildlife at Stuart's Hill would be long-term adverse and minor because of the potential removal of vegetation to construct the road and improve parking. There would be beneficial impacts to vegetation from rehabilitation of the existing roadbed.
- The reduction of woodlands would have a negligible to minor long-term adverse impact on forest species and a negligible to minor long-term beneficial impact on species that prefer grasslands and edge habitats.
- Collectively, the cumulative impact would be anticipated to be minor to moderate long-term and adverse.

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 Manassas National Battlefield Park and previous consultation or 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.

- *May effect but is 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 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 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.

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

There are populations of state-listed rare plant species near segments of existing trails and other portions of the park that could be susceptible to disturbance from trail work or other construction. Trail work would be accomplished without disturbing these populations, although slight realignment of trails may be necessary. Therefore, it would have no effect on species of special concern. Additional environmental studies would be conducted prior to work outside the original footprint of the existing trails at the park.

Transportation improvements would have no effect on threatened, endangered, or rare species or their habitats. This would occur 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.

Approximately 327 acres of forested habitat would be removed and managed as open fields to rehabilitate the cultural landscape. This would create additional habitat for species that prefer open fields or edge habitat between forests and fields. The only area-sensitive forest species known to occur within the cut areas is the wood thrush, which occurs in relatively small woodlands.

No impacts to important natural communities would occur from cultural landscape rehabilitation. 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 the state-listed rare species that are associated with

these open habitats. These species include hairy beardtongue and blue-hearts.

The proposed actions described in alternative B would have no effect on threatened, endangered, or rare species, and are not likely to adversely affect their habitats. Consequently, they 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 adversely affect others, with an overall net loss of forest habitat and a concomitant net gain of open fields. These actions may affect but are not likely to adversely affect 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 is not likely to adversely affect habitat suitable for forest species, particularly area-sensitive species, which include the Acadian flycatcher and wood thrush. Overall, the loss of woodlands may affect but is not likely to adversely affect populations 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 may affect but are not likely to adversely affect 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 in the long term to affect but not likely adversely affect threatened and endangered species.

**Conclusion.** The proposed actions described in alternative B would have no effect on threatened, endangered, or rare species and may affect but are not likely to adversely affect their habitats, because no supporting habitats

would be disturbed. Forest removal to rehabilitate the historic landscape may affect but is not likely to adversely affect species that prefer open fields or edge habitat, including two species of concern, the prairie warbler and field sparrow. Woodland species, including the Acadian flycatcher and wood thrush, may be affected, but are not likely to be adversely affected. The cumulative impact would affect but not likely adversely affect threatened and endangered species.

Because this alternative may affect but is not likely to adversely affect 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 that could be susceptible to disturbance from trail work. Trail work would be accomplished without disturbing these populations, although slight realignment of trails may be necessary. Therefore, it would have no effect on species of special concern. 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.

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 and development of the new access road and bridge in a different location, the National Park Service would practice avoidance to the greatest extent possible.

Approximately 72 acres of forested habitat, less than 5 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. There would be a minor benefit to these species, such as the prairie warbler. These impacts would not be as extensive under this alternative as they would be in alternative B, because of 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. As a result, this alternative may affect, but is not likely to adversely affect this species.

No impacts to important 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.

**Cumulative Impacts.** When combined with other past, present, and reasonably foreseeable future projects, the construction-related activities under alternative C may affect but are not likely to adversely affect 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 in the long term to affect but not likely adversely affect threatened and endangered species.

**Conclusion.** The proposed actions described in alternative C may affect but are not likely to adversely affect threatened, endangered, or rare species or their habitats because no supporting habitats would be disturbed. Forest removal to create view corridors may affect but is not likely to adversely affect the prairie warbler, which prefers open fields or edge habitat. Woodland species, including wood thrush, may be affected, but are not likely to be adversely affected. The cumulative impact would affect but not likely adversely affect threatened and endangered species.

Because this alternative may affect but is not likely to adversely affect 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 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 would be 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 would be 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 would be 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 would be severe 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 production during forest removal or construction activities. With best management practices, the long-term adverse impacts would be negligible because the area

of disturbance would be a sufficient distance from any water resources, and the indirect effects of sediment production would be minimized through the use of best management practices such as silt fencing.

**Cumulative Impacts.** Other past, present, and reasonably foreseeable future projects, such as the 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 A would add a moderate incremental impact. When these impacts were combined with the construction-related impacts of alternative A, the cumulative adverse impact would be long-term and moderate.

**Conclusion.** The no-action alternative would have long-term negligible adverse impacts on water resources. The cumulative adverse impact would be long-term and moderate. 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 new access road and improved parking lot at Stuart's Hill could have an adverse impact on water resources. The proposed new road 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 impact on the park's waters, wetlands, or floodplains. The removal of commuter and truck traffic, with associated reductions in pollution from those vehicles, from the portions of U.S. 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 minor 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.

A new road and bridge over Bull Run would be built to connect U.S. Route 29. This action would have moderate long-term adverse impacts on the stream, floodplain, and, potentially, wetlands. These impacts could include a localized decrease in quality and modification of floodplain processes.

The location of the new 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 the NPS' *Management Policies*.

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 alternative 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." Preservation and maintenance activities would have a negligible impact on water resources.

**Cumulative Impacts.** Other past, present, and reasonably foreseeable future projects, such as the 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 B would add a moderate incremental impact. When these impacts were combined with the construction-related impacts of alternative B, the cumulative adverse impact would be long-term and moderate.

**Conclusion.** Water resources would experience both beneficial and adverse impacts. Specifically,

- The new Stuart's Hill access road would have short-term negligible adverse impacts.
- Transportation-related improvements would have a long-term beneficial impact by reducing the volume of polluted runoff that would reach water resources in the park.
- 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 new bridge over Bull Run and its associated approach roads would have moderate long-term adverse impacts on the floodplain, stream, and potentially wetlands.
- The cumulative adverse impact would be long-term and moderate.

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 visitor center to the east of Stone Bridge. Appropriate sediment and erosion control practices would mean that the construction of the visitor center would likely have a negligible adverse impact on water resources, specifically Bull Run and its associated wetlands and floodplains. However, the new visitor center would require a new bridge over Bull Run and associated approach roads to connect the visitor center with U.S. Route 29.

The new bridge and approach road 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 #12, and the NPS' *Management Policies*.

The removal of commuter and truck traffic, which would reduce pollution from those vehicles, from the portions of U.S. 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 production 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.

The new access road and improved parking lot at Stuart's Hill could have an adverse impact on water resources. The proposed new road 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.

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. 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 alternative 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." Preservation and maintenance activities would have a negligible impact 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.** Water resources would experience both beneficial and adverse impacts. Specifically,

- Transportation-related improvements would have a long-term, beneficial impact

by reducing the volume of polluted runoff that would reach water resources in the park.

- 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 new visitor center, new bridge over Bull Run, and its associated approach roads would have moderate long-term adverse impacts on the floodplain, stream, and potentially wetlands.
- The new Stuart's Hill access road would have short-term negligible adverse impacts.
- The cumulative adverse impact would be long-term and moderate.

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 Section 106 of the National Historic Preservation Act (36 *Code of Federal Regulations* 800, Protection of Historic Properties). This was accomplished 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. This would include 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 *Code of Federal Regulations* 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 *Code of Federal Regulations* 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 Section 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 beneficial.
- *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. Any sites or areas with archeological resources that were 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-listed or -eligible 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, and the development of the Manassas visitor center and other park infrastructure, may have adversely impacted archeological resources because of disturbance during excavation and construction activities.

The development and expansion of communities near the park may have disturbed archeological resources outside park

boundaries. The continuation of such development could result in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, such as 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-listed or -eligible archeological resources that could not be avoided would be adverse.

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.

The cumulative impact of this alternative in conjunction with development occurring outside the park would be adverse. However, 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 because of inadvertent disturbance or vandalism. Avoidance of National Register-listed or eligible archeological resources during 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 Code of Federal Regulations 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 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 Secretary of Interior's order establishing 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. Impacts to both the cultural landscape 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. 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 Secretary of Interior's order establishing 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 onsite and offsite, would continue to be adequately inventoried, accessioned, and protected according to NPS standards. Because onsite storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an offsite 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. This would result in 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 onsite and offsite. In the future, more of the park's museum collections would have to be moved to an offsite repository for adequate curation, storage, and research. Prior to the establishment of the park in 1940, artifacts and archives associated with the Battles of First and Second 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.

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 onsite and offsite. Moving artifacts and archives from the park to a facility outside the park would be less convenient for park staff members who require use of the collections for research, which would be 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. The implementation of alternative A would not result in impairment of park resources.



## 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 could potentially impact archeological resources. These include

- constructing new visitor facilities at the Brawner Farm
- constructing a new access road and bridge over Bull Run
- landscape rehabilitation
- installation of underground utilities for new facilities
- development of automobile/bicycle tour routes, parking areas, hiking and equestrian trails and restrooms
- building a new access road to park facilities at Stuart's Hill

Archeological surveys would precede any construction, and known archeological resources would be avoided during construction to the greatest extent possible. If National Register-listed or -eligible 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 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-listed or -eligible archeological resources would be adverse.

The extent of archeological resources associated with the Battles of First and Second Manassas in the four tracts of land (Davis Tract, Stonewall Memory Garden Tract, Conservation Trust Parcel, and 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, including Section 106 of the National Historic Preservation Act, as amended in 1992 (16 *United States Code* 470 *et seq.*), which would result in a beneficial effect.

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

The development and expansion of communities near the park may have disturbed archeological resources outside park boundaries. The continuation of such development could result

in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, such as 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-listed or -eligible archeological resources that could not be avoided would be adverse.

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 the removal and construction 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 *Code of Federal Regulations* 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 Secretary of Interior's order establishing 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.

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. 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 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 in areas that were not forested 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 to the positions of the embattled Union and Confederate troops, and would 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 on the cultural landscape.

Any new construction for a Second Manassas visitor contact station at the Brawner Farm and 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 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 was installed and the trench was backfilled, the disturbed ground would be restored to its pre-construction contour and condition and 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 on the battlefield landscape. Restricting commuter traffic and commercial truck access to U.S. Route 29 and VA Route 234 would result in a beneficial impact to 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 and for a new access road and bridge over Bull Run 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 from areas that were not forested 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 Secretary of Interior's order establishing 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 onsite and offsite, would continue to be adequately inventoried, accessioned, and protected according to NPS

standards. Because onsite storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an offsite 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. This would result in 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 onsite and offsite. In the future, more of the park's museum collections would have to be moved to an offsite repository for adequate curation, storage, and research. Prior to the establishment of the park in 1940, artifacts and archives associated with the Battles of First and Second 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.

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 members who require use of the collections for research, which would be 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. The implementation of alternative B would not result in impairment of park resources.

### **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 could potentially impact archeological resources. These include

- 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

- the development of hiking and equestrian trails, restrooms, and picnic areas
- building a new access road to park facilities at Stuart's Hill

Archeological surveys would precede any construction, and known archeological resources would be avoided during construction to the greatest extent possible. If National Register-listed or -eligible 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-listed or -eligible archeological resources would be adverse.

The extent of archeological resources associated with the Battles of First and Second Manassas in the four tracts of land (Davis Tract, Stonewall Memory Garden Tract, Conservation Trust Parcel, and 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, including Section 106 of the National Historic Preservation Act, as

amended in 1992 (16 *United States Code* 470 *et seq.*), which would result in a beneficial effect.

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

The development and expansion of communities near the park may have disturbed archeological resources outside park boundaries. The continuation of such development could result in future adverse impacts to archeological resources. Other present and reasonably foreseeable actions occurring throughout the region, such as 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-listed or -eligible archeological resources that could not be avoided would be adverse.

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 *Code of Federal Regulations* 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 Secretary of Interior's order establishing 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.

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. 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 in areas that were not forested 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 would 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 battle-

field 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 as a result of the construction of a new visitor center east of the stone bridge.

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 was installed and the trench was backfilled, the disturbed ground would be restored to its pre-construction contour and condition and 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 on the battlefield landscape. Restricting commuter traffic and commercial truck access to U.S. Route 29 and VA Route 234 would result in a beneficial impact to 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 the new visitor center east of the Stone Bridge, including a new access road and bridge over Bull Run 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 from areas that were not forested 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 Secretary of Interior's order establishing 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 onsite and offsite, would continue to be adequately inventoried, accessioned, and protected according to NPS standards. Because onsite storage facilities are nearing capacity, eventually more of the park's museum collections would need to be moved to an offsite 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 who require use of the collections for research. This would result in 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 onsite 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 Battles of First and Second 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.

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 members who require use of the collections for research, which would be 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. The implementation of alternative C would not result in impairment of park resources.

## IMPACTS ON TRANSPORTATION

### METHODOLOGY

In the impact analysis for transportation, the National Park Service considered the potential effects of the proposed controlled access measures, such as gates, entrance stations, signs, and road closures, 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 Battlefield Bypass study. As a result, the implementation of any controlled access or road closures is dependent on the outcome of the Battlefield 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 the 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 the NPS' *Management Policies*. 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. Effects of transportation improvements are also considered under other impact topics, including soundscape, the socioeconomic environment, and visitor experience.

### 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

because of 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. Under alternative A, 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. Traffic 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.

### **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 alternative, 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)
- along U.S. Route 29 east of VA Route 705 (Pageland Lane)
- along U.S. Route 29 west of the eastern park boundary

The National Park Service would remove the existing U.S. Route 29 bridge over Bull Run and develop a new road and bridge over Bull Run south of the current location. The new access road would include a controlled access point.

Controlling access into the park on VA Route 234 north of the Community College would eliminate commuter traffic and facilitate greater contact between park staff and visitors.

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. 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 and 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 control devices and measures. This section provides the National Park Service with general management direction that the controlled access at entry points would be used to achieve the elimination of commuter traffic within the Park.

Under the controlled access scenario at the four 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. 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 adversely 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 a negligible adverse impact on the nearby college and businesses.

The U.S. Route 29 bridge over Bull Run would be removed and a new road and bridge over Bull Run would be developed. Because the new access road would include a controlled access point, there would be no increase in commuter traffic volumes associated with the new access route and bridge. The removal of the U.S. Route 29 bridge over Bull Run would help rehabilitate the cultural landscape and historic setting of the Stone Bridge by eliminating the modern highway bridge from the Stone Bridge viewshed. The development of the new access road and entrance station 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 existing modern highway bridge and development of the new access road and bridge in a different location would be an irreversible commitment of resources and is called out as such at the end of this “Environmental Consequences” chapter.

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 miles per hour
- designating bicycle lanes along primary roads

- placing another four-way stop sign and pedestrian crossing signs at intersections with secondary roads and trail routes
- replacing 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 Battlefield 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 major long-term and beneficial.

### **Conclusion**

The controlled access measures 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 Battlefield 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. Cumulatively, 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.

### **ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS**

Under alternative C, many of the proposed transportation improvements, such as controlled access at four entrances and removal of the U.S. Route 29 bridge over Bull Run, would be the same as alternative B. Therefore, the impacts from these actions would be the same as alternative B.

One exception is the proposed visitor center near the new access road and bridge over Bull Run on the east side of the park. Potential transportation impacts associated with a new visitor center would depend on the specific location of the visitor center. Additional study would be conducted to further assess the potential effects of 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 from alternative C would be moderate. The transportation improvements identified in the Battlefield Bypass, Tri-County Parkway, I-66, and VA Route 234 Bypass North studies would have beneficial impacts on transportation because of increased capacity of the regional roadway network surrounding the park. Collectively, the cumulative impact would 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

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transportation improvements when added to other proposed projects would have a major

long-term beneficial cumulative impact on transportation.

## IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

### METHODOLOGY

The analysis focused primarily on the potential impacts to residents who require access through the park to get to their homes. Further study would be performed by the National Park Service to determine the specific type and location of controlled access, such as gates, entrance stations, and/or signs.

For this programmatic study, the impacts discussed are qualitative. Additional planning and environmental analysis would be conducted to determine site-specific impacts on the socio-economic environment. As part of the Battlefield Bypass study, the Federal Highway Administration and the National Park Service are considering the potential impacts to the socioeconomic 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 would be 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*: Short-term impacts are temporary in duration and typically are

transitional effects associated with implementation of an action, such as construction activities, and end in less than one year. 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, the impact to the socioeconomic environment would be negligible.

#### Cumulative Impacts

Negligible cumulative impacts would occur because there would be a negligible change to the socioeconomic environment caused by the no-action alternative.

#### Conclusion

The no-action alternative would have negligible impacts to the socioeconomic environment. Cumulative impacts would be negligible.

### 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 or entrance station. 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 long-term adverse impacts to these residents would be negligible.

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 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 because the commuter traffic within the park would be eliminated. The overall effect would be negligible.

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 because of 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. The overall effect would be negligible.

Road closures and controlled access would have adverse impacts on nearby local businesses that use U.S. Route 29. The impacts would depend on the location of a bypass and are therefore being considered as part of the Battlefield Bypass study. The impacts associated with controlled access would be minor if a bypass route was 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 a negligible adverse impact 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 largely depend 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 the new controlled-access area because of the delays associated with controlled access measures. The impacts could be offset by the benefits of the reduction in traffic and associated delays at the intersections within the park. In addition, there would be an added security benefit to residents, similar to living within a gated area. Negligible impacts to emergency response would occur. A few businesses could experience minor adverse long-term impacts. Minor, adverse cumulative impacts would occur.

### **ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS**

Under alternative C, the proposed transportation improvements, such as controlled access at entrances would be the same as for alternative B. Therefore, the impacts on the socioeconomic environment would be to the same as those 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 would largely depend 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 of the delays associated with the new 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 an added security benefit to residents, similar to living within 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 focused on changes to the levels of recreational opportunities for Manassas National Battlefield Park visitors. 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 severe 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 a negligible long-term impact on recreation.

#### Cumulative Impact

A negligible impact on recreation would occur; therefore, the cumulative impact would be negligible.

#### Conclusion

A negligible impact on existing or future recreational opportunities or facilities would occur. Cumulative impacts would be negligible. There would be no impairment to park resources or values.

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

The new access road and improved 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**

The new access road and improved 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 because of the conceptual nature of the alternatives.

### DEFINITION OF INTENSITY LEVELS

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

- *Negligible*: Any change would not be perceptible or would be barely perceptible by most visitors.
- *Minor*: Changes would occur in a few visitors' experiences that would be noticeable, but would result in little distraction or improvements in the quality of the experience.
- *Moderate*: Changes would occur in 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*: There would be a substantial improvement 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)

Visitors would continue to experience major long-term adverse impacts because of 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 would continue to conflict with the slower-moving park traffic. Park visitors are usually looking for the visitor center, headquarters, and various automobile 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 would continue to encroach on the peaceful and solemn setting of the battlefield.

Visitor exposure to and understanding of the Battle of Second 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 automobile tour route and the establishment of the Stuart's Hill visitor contact station. However, the Battle of First Manassas still receives greater visitor attention because of 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 because of 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, such as the rationale for the war, the overall strategies of the two armies, and the factors that led 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 would continue 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 would remain on First Manassas because of 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 because of the conflicts between park visitors and non-park traffic, a major long-term adverse impact would occur to the visitor experience and use. Cumulative impacts would be moderate long-term and adverse.

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

Visitors' exposure to and understanding of both battles of Manassas would be enhanced with 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 Second Battle would be interpreted at a separate visitor contact station. Reduced vehicular traffic in the park and a new access road to Stuart's Hill and improvements to the parking lot would greatly facilitate use of and access to the picnic area at Stuart's Hill and the Second Manassas visitor contact station until the contact station is moved to Brawner Farm.

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 automobile 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.

The enhancements associated with improvements at the visitor center, visitor contact station, tour routes, trails, and other interpretive materials collectively would have a long-term beneficial impact of moderate intensity on the visitor experience.

There would be a major long-term beneficial impact to visitor experience from the removal of the 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 because of 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.

The new access road and improved parking and 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 within the park would improve the visitor experience. Under alternative B, the controlled access and other improvements would also enhance the visitor experience by ensuring that traffic within the park was 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.

There would be a major long-term beneficial impact to visitor experience from the removal of the heavy volumes of commuter and

commercial truck traffic from the park. Park visitors would be able to 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 facilitate comprehension of components of the engagements. Preservation, stabilization, and in some case rehabilitation would ensure that the resources were preserved for future generations to enjoy. A moderate long-term beneficial impact on the visitor experience would occur.

The new access road and improved parking and 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 within the park would improve the visitor experience. Under alternative C, the controlled access and other improvements would also improve 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 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, and administrative facilities, 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 would result in substantial change in park operations in a manner noticeable to the staff and public.
- *Major*: Impacts would be readily apparent, would result in a substantial change in park operations in a manner noticeable to staff and the public, and would be markedly different from 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 alternative, there would not be a noticeable change in the level of staffing and the use of facilities at the park. 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, negligible cumulative impact would occur.

#### Conclusion

The traffic in the park would continue to have a minor long-term adverse impact would occur for park operations. Negligible cumulative impacts 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. A separate, fully staffed visitor contact station would focus on Second Manassas. New exhibits and interpretive programs would tell the story of Second Manassas.

The updated interpretive materials and revised interpretative focus at each visitor facility would require a minor short-term change in staff activities. The change would occur gradually over time as additional support or funding became available. 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.

The new access road and improved parking at Stuart's Hill would provide safer access the facilities for both visitors and park staff.

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 having contact with park staff or volunteers. The proposed contact stations would result in more contact between visitors and park staff, which would facilitate early orientation to the park. 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 impact on park operations and maintenance; therefore, no cumulative impact would occur.

### **Conclusion**

Alternative B would have minor and moderate long-term adverse impacts on park operations and maintenance because of changed operations associated with a visitor contact station for Second Manassas, new interpretive programs, change in ownership of the roads,

and controlled access into the park. Negligible cumulative impacts 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 updated interpretive materials and revised interpretative focus would require a minor short-term change in staff activities. The change would occur gradually as additional support or funding became available. 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. Currently, the park does not have staff identified or available to service the proposed entrance stations. 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 having contact with park staff or volunteers. The proposed contact stations would result in more contact between visitors on park staff, which would facilitate early orientation to 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 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 minor and moderate long-term adverse impacts on park operations and maintenance because of changes 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. Negligible cumulative impact would occur.

## UNAVOIDABLE ADVERSE IMPACTS

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

Visitor safety and experience continues would continue 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 would remain primarily on First Manassas because of 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 would continue to prevent visitors from understanding the comprehensive story of the battles.

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

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

The new bridge and access road across Bull Run would have unavoidable adverse impacts on water resources.

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**

There would be a small decrease in the woodlands within the park from forest cutting performed to establish view corridors.

The new bridge and access road across Bull Run would have unavoidable adverse impacts on water resources.

The construction of a new visitor to the east of Stone Bridge would have an unavoidable adverse impact on vegetation.

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— CONTINUING CURRENT MANAGEMENT PRACTICES (NO-ACTION ALTERNATIVE)

Under the no-action alternative, there would be no short-term use of the environment that would encroach on 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 resulting from 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 resulting from 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)**

In Alternative B, the removal of the U.S. Route 29 bridge over Bull Run and construction of a

new access road and bridge over Bull Run would be an irreversible commitment of resources.

### **ALTERNATIVE C—THE DEFINING MOMENTS OF THE BATTLES OF MANASSAS**

In alternative C 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.

