

CHAPTER 4:
ENVIRONMENTAL
CONSEQUENCES

(blank back of divider)

INTRODUCTION

ENVIRONMENTAL ANALYSIS

The National Environmental Policy Act requires that environmental documents include discussion of the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that could not be avoided if a proposed action should be implemented. The proposed federal action in this case would be the adoption of a general management plan for Monocacy National Battlefield. This chapter contains the analysis of the environmental effects on cultural resources, the visitor experience, the socioeconomic environment, and national battlefield operations that would result from the actions of each of the four alternatives. The analysis is the basis for comparing the beneficial and adverse effects that would be caused by each alternative.

Because the actions described in the alternatives are general and conceptual, the impacts of these actions are analyzed in general qualitative terms. Thus, this environmental impact statement should be considered a programmatic analysis. If and when site-specific developments or other actions are proposed for implementation after the *Final General Management Plan* is published, appropriate detailed environmental and cultural compliance documentation will be prepared in accordance with the requirements of the National Environmental Policy Act and the National Historic Preservation Act.

For each topic in this chapter, first, the methods and assumptions are described,

then the effects on the topic that would occur from each alternative are analyzed. Each alternative discussion also includes a description of the cumulative effects, followed by a conclusion. At the end of the impact section there is a brief discussion of the unavoidable adverse impacts, irreversible and irretrievable commitments of resources, the relationship of short-term uses of the environment and the maintenance and enhancement of long-term productivity, and the energy requirements and conservation potential. The impacts of each alternative are briefly summarized in table 3.

CUMULATIVE IMPACTS

A cumulative impact is described in the regulations of the Council on Environmental Quality (1508.7) as follows:

“Cumulative impact” is the impact on the environment which 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

To determine potential cumulative impacts, projects in and around Monocacy National Battlefield were identified. The area included Frederick

County, Maryland. Projects were determined by meetings and telephone calls with county and town governments and state land managers. Potential projects identified as cumulative actions were any planning or development activity in progress or that would be implemented in the reasonably foreseeable future. The effects of past actions also were considered in the analysis.

The projects discussed above were evaluated in conjunction with the effects of each alternative to determine if they would result in any cumulative effects on a particular natural, cultural, or socioeconomic resource or visitor use. Because most of these cumulative actions are in the early planning stages, the qualitative evaluation of cumulative impacts was based on a general description of the project.

Past Actions

A significant change to Monocacy's cultural landscape occurred in 1951 with the construction of Route 240, now known as Interstate Highway 270. Approximately 2 miles of the road were built through what is now the national battlefield. The four-lane highway bisected the heart of the battlefield, causing significant alterations of the landscape. Property boundaries were reconfigured, new access roads were built to replace blocked historic lanes, and all connection between the Worthington and Thomas Farms was lost.

The view of this road and the noise it produces dominate the landscape and detract from the contemplative atmosphere of the battlefield. Visitors have trouble visualizing troop

movements and the major points of engagement; thus, the visitor experience is degraded. In sum, the highway cuts the battlefield landscape virtually in two, destroying the integrity of the setting of the final battle phase.

With the completion of the interstate highway, the Georgetown Pike (or Urbana Pike), which by 1937 had been renamed Maryland Highway 355, no longer was the primary road between Washington, D.C., and Frederick. The addition of I-270 encouraged more suburban growth in the region when the highway became the primary north-south commuting route between Washington and Frederick. Sprawling low-density development grew within the boundaries of the towns and villages or along rural roads surrounding the battlefield.

When the National Park Service bought the Gambrill House, it was in a state of disrepair. Rehabilitation undertaken by the Historic Preservation Training Center preserved the structural integrity and many of its historic architectural elements. These activities, which were generally beneficial, resulted in no adverse effect.

In the first half of the 20th century the Gambrill Mill was heavily affected by the removal of its third story and the milling machinery and water features associated with its original mill function. After the National Park Service acquired the mill, the interior of the structure was rehabilitated for use as administrative offices for the national battlefield. The building's interior and exterior retain little resemblance to the period of its historic use.

Frederick County is one of the fastest growing counties in the Washington metropolitan area. Over the past 20 years significant development has encroached on the north and west boundaries of the national battlefield, altering many of the visual, circulatory, and auditory elements of the agricultural landscape between the city of Frederick and the battlefield, an adverse effect on the landscape.

Water and sewer lines have been constructed through Monocacy National Battlefield with easements that allow for added or enlarged lines within the right-of-way. Frederick County will construct a water transmission main across the Best Farm in 2005, parallel to an existing sewer line and in that easement.

Several utility easements were in place in the battlefield before the National Park Service acquired the properties. As a result of this infrastructure, the National Park Service will be pressured to keep expanding water and sewer lines through the national battlefield as population continues to grow and more water resources are needed, particularly because of the potential of the Urbana Planned Utility District to double in size from 4,000 housing units to 8,000. A parallel 36-inch line is proposed along Baker Valley Road for the future. This would cause great impacts on the Baker and Thomas farms.

Current Actions

A new visitor center for the national battlefield opened during the spring of 2007. The center houses interpretive exhibits and office space for the interpretive staff. It is on the east side of

MD 355 at the extreme northern end of the national battlefield. With the opening of the new visitor center, the previous visitor contact station in the Gambrill Mill is now available for hosting school groups or for classrooms.

The building and parking area for the new visitor center cover some agricultural land, increasing development and the intensity of visitor use there, but adds major enhancements of the information and interpretation available to visitors.

Future Actions

With the addition of facilities and the execution of actions described in this plan, and as Monocacy National Battlefield becomes better known, visitation to the national battlefield probably would increase. The effect on the community probably would be substantial. Traffic would increase in and around the battlefield both because of more visitation and because communities around the national battlefield would grow. This would add congestion to the roadways.

The sale of goods and services to national battlefield visitors by local businesses could be substantial for nearby businesses but small in comparison to the Frederick business community as a whole.

The proposed widening of the I-270 corridor through the national battlefield (as part of the Multi-Modal Corridor Study discussed on page 23) would result in a major adverse impact on the battlefield's cultural landscape. A wider swath of land through the national battlefield could be necessary; this

would make the road — an already intrusive visual feature — more visible. As a possible mitigative action for this intrusion, the National Park Service would consider constructing a deck over a small part of I-270 (as described on page 84) to allow for a symbolic and actual reconnection between two of the national battlefield's most significant resources, the Worthington and Thomas farmsteads. The deck, with crops and hedgerows, would mask a small section of highway. The effect of adding the deck would not be adverse.

In preparing this plan, the National Park Service considered the effects of development outside the boundary of the national battlefield. Essentially, there is development on all but the southwest boundary. To the north are offices, large retail structures, and an enclosed shopping mall; on the east are parcels of subdivided land containing homes and home sites. The unincorporated community of Araby is adjacent to the south boundary, and a bit farther south is the rapidly developing town of Urbana. With more development comes traffic congestion on MD 355 and on Araby Church and Baker Valley roads. Pressure could be placed on the National Park Service to allow the widening of MD 355 through the national battlefield. Existing water and wastewater transmission lines through the national battlefield might need to be enlarged.

With development increasing around the national battlefield, animal habitat would be lost and corridors into and out of the battlefield could become choked. Continued development would make

farming in the area less viable, and retaining the area's vanishing agrarian landscape would become more difficult. All these events would result in adverse effects on the landscape of the national battlefield.

The creation of a state-of-the-art, environmentally friendly visitor facility has been proposed. Such a feature would be placed at the existing I-270 overlook south of the national battlefield. This would be a separate project from the I-270 / U.S. 15 Multi-Modal Corridor Study.

The effect on the national battlefield from the I-270 Overlook/ Demonstration project (described on p. 28) probably would be negligible. Visitors stopping at the site might receive information about the national battlefield and decide to visit there. The location of the proposed overlook is not visible from historic areas of the national battlefield, so there would be no effect on cultural resources.

The effect of possibly removing administrative or maintenance facilities into rental space outside the national battlefield would not be adverse from a cultural resource perspective, and the long-term effect on the economy of Frederick would be negligible.

Adding an alternative transportation system could result in moderate to major beneficial effects on local traffic, depending on the hours of its operation and whether the use of the system was mandatory or optional.

IMPAIRMENT OF RESOURCES

In addition to determining the environmental consequences of the alternatives, NPS policy requires that the potential effects be analyzed to determine whether or not proposed actions would impair the resources or values of the park system unit (in this case, Monocacy National Battlefield). The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. NPS managers must always seek ways to avoid or to minimize, to the greatest degree practicable, any adverse impacts on the resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts on the resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service this management discretion to allow certain impacts, that discretion is limited by the statutory requirement that the National Park Service must leave the resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of the resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values

(NPS *Management Policies 2006*, 1.4.5). An impact on any resource or value may constitute impairment. An impact would be most likely to constitute an impairment if it affected a resource or value whose conservation would be (a) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the national park system unit, (b) key to its natural or cultural integrity or to opportunities to enjoy it, or (c) identified as a goal in its general management plan or other relevant NPS planning documents.

Impairment might result from NPS management activities, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the national battlefield. In this document, a determination about impairment is made in the conclusion section for each impact topic in the “Environmental Consequences” chapter, except that impairment findings are unnecessary for visitor use and experience (unless the impact would be resource based), for NPS operations, and for the socioeconomic environment. When it has been determined that an action or actions would result in moderate to major adverse effects, a justification for nonimpairment must be made. Effects of only negligible or minor intensity by definition would not result in impairment.

METHODS AND ASSUMPTIONS FOR ASSESSING EFFECTS

The planning team based the impact analysis and the conclusions in this chapter largely on the review of existing literature and studies, on information provided by experts in the National

Park Service and other agencies, and on the insights and professional judgment of the battlefield staff. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed with the assumption that mitigating measures would be implemented to minimize or avoid impacts. If the mitigating measures as described beginning on page 85 were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

NPS Director's Order (DO) 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*, presents an approach to identifying the duration (short term or long term), type (adverse or beneficial), and intensity or magnitude (negligible, minor, moderate, or major) of the impact(s), and that approach has been used in this document. When duration is not noted in the impact analysis, it is considered long term. Direct and indirect effects caused by an action were considered in the analysis. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or farther removed from the place but are still reasonably foreseeable.

The effects described for the action alternatives include a description of the *difference between* implementing the no-action alternative and implementing each action alternative. To comprehend a "full picture" of the effects of implementing any of the action alternatives, readers also must consider the effects that would result from the no-action alternative.

CEQ regulations and NPS DO 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*, also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact. For example, would the intensity of an impact be reduced from major to moderate or minor? Any resultant reduction in the intensity of an impact by mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by section 106 of the National Historic Preservation Act of 1966, as amended, would be similarly reduced. Although adverse effects under section 106 may be mitigated, the effect would remain adverse.

EFFECTS ON CULTURAL RESOURCES

METHODS FOR ASSESSING EFFECTS — NATIONAL REGISTER AND SECTION 106

In accordance with the regulations of the Advisory Council on Historic Preservation on implementing section 106 (36 CFR 800, “Protection of Historic Properties”), the potential impacts on cultural resources (historic structures and cultural landscapes) were identified and evaluated by (a) determining the area of potential effects; (b) identifying cultural resources present in the area of potential effects that either are listed in or are eligible to be listed on the National Register of Historic Places; (c) applying the criteria of adverse effect to affected cultural resources; and (d) considering ways to avoid, minimize, or mitigate adverse effects.

Under the regulations of the Advisory Council on Historic Preservation, a determination of *no effect*, *adverse effect*, or *no adverse effect* also must be made for affected cultural resources either listed on the National Register of Historic Places or eligible to be listed on the national register. A determination of *no historic properties affected* means either that no historic properties are present or that historic properties are present but the undertaking would not affect them. (36 CFR 800.4 (d)(1)).

An *adverse effect* occurs whenever an action would alter, directly or indirectly, any characteristic of a cultural resource qualifying it for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the resource’s location, design, setting,

materials, workmanship, feeling, or association. Adverse effects also can include reasonably foreseeable effects caused by the possible actions of an alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5 (a) (1)). A determination of *no adverse effect* could mean that there would be an effect, but that the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register of Historic Places (36 CFR 800.5 (b)).

Thus, the criteria for characterizing the severity or intensity of effects on archeological resources, historic structures, and cultural landscapes listed in or eligible for listing in the national register are the section 106 determinations of effect: *no historic properties affected*, *adverse effect*, or *no adverse effect*. A determination of effect is mentioned in the conclusion sections for historic structures and cultural landscapes.

PRESERVATION TREATMENTS

Special preservation treatments are required for many historic structures in the national battlefield. The terms used to describe these treatments have specific definitions as delineated in the *Secretary of the Interior’s Standards for the Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes*. That document defines the principles that federal agencies must follow when they stabilize or alter historic buildings, landscapes, or sites. Of the four levels of treatment, only two

are proposed in this document — preservation and rehabilitation.

Preservation is the process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. The work includes stabilizing the property and focuses on the ongoing maintenance and repair of historic materials and features. Preservation maintains the existing character of the resource. Most of the activity that takes place in Monocacy National Battlefield today is preservation — buildings, monuments, and landscapes are stabilized and repaired to maintain their existing character.

Rehabilitation makes possible compatible uses for properties through their repair, alteration, and addition while preserving significant historic features that convey historical values. Rehabilitation identifies, protects, retains, and preserves historic features. Changes that have acquired significance in their own right generally are retained and preserved. Historic features that have been changed or have deteriorated may be repaired. Rehabilitation could also allow for the replacement of missing historic features like fences. Finally, rehabilitation permits alterations and additions for new use as long as the historic appearance and character are retained.

EFFECTS ON HISTORIC BUILDINGS AND OTHER STRUCTURES

Historic Structures Defined

A historic building or structure is a constructed work consciously created to serve some human activity. Historic structures usually are immovable,

although some have been relocated and others are mobile by design. They include buildings, monuments, dams, millraces, canals; bridges, roads, railroad tracks, and rolling stock. In some cases they comprise standing ruins of all structural types.

The form nominating the Monocacy National Battlefield to the National Register of Historic Places has been revised recently. The revised form lists 44 structures, monuments, and sites as contributing to the battlefield's significance — houses, barns, outbuildings, and Civil War monuments. One of the structures, the Gambrill House, has been individually listed in the National Register of Historic Places.

The National Park Service maintains a List of Classified Structures for all sites in the national park system. This list is the primary reference of building types, significance, condition, and recommended treatments. The current list of classified structures for Monocacy National Battlefield identifies 51 structures.

NPS DO 28, *Cultural Resource Management Guideline* prohibits the demolition or neglect of resources listed in or considered eligible for inclusion in the National Register of Historic Places or of structures for which the eligibility has not yet been determined, unless all other options have been found to be infeasible. Management policies prohibit the demolition of those structures unless it is necessary to eliminate an unacceptable intrusion or for public safety.

Effects from Alternative 1 (No Action)

Analysis. There would be no adverse effects from stabilizing historic structures not used for interpretation or national battlefield operations to preserve and protect them from further deterioration. Stabilizing and preserving the main houses and outbuildings on the Best, Thomas, Lewis, and Worthington farms would result in no adverse effects on these structures.

Continuing the existing agreement with the Historic Preservation Training Center for the use of the Gambrill House would result in no changes, and no historic properties would be affected.

The ongoing maintenance of monuments would result in a determination of no effect.

Keeping administrative offices and functions on the second floor of the Gambrill Mill would result in continued crowding and inadequate storage. Since this structure contains little historic fabric, it would not be adversely affected.

Cumulative Effects. No cumulative effects on historic buildings and other structures (as defined earlier in this chapter, p. 139) have been identified.

Conclusion. Continuing to stabilize and preserve historic buildings would considerably reduce the loss of historic fabric over time. The resulting effects would be generally beneficial, with a determination of no adverse effect.

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

establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 2

Analysis. Stabilizing historic structures not used for interpretation or national battlefield operations to preserve and protect them from further deterioration would not result in any adverse effects on these structures. Stabilizing and preserving the main houses on the Lewis and Worthington farms and the outbuildings on the Best, Thomas, and Lewis farms would cause no adverse effects on these structures.

Rehabilitating the Best House and leasing the Thomas House under the historic leasing program to allow adaptive use could result in a determination varying from no effect to no adverse effect on these structures, depending on the nature of the changes. Such changes could involve repair or stabilization of the original fabric and in-kind replacement.

Rehabilitating the stone tenant house at the Thomas Farm for interpretive exhibits and displays would result in a determination of no adverse effect because the interior retains little integrity. Alterations could involve repair or stabilization of the original fabric and in-kind replacement.

The ongoing access to and maintenance of commemorative monuments would have no effect on historic properties.

The internal spaces of the Gambrill Mill already have been altered from their historic shape, and little historic fabric remains. Using the first floor of the mill for classrooms or interpretive talks and the second floor for temporary housing would simply represent a change from one nonhistoric use to another. Therefore, this alternative would result in no effect on this structure.

Cumulative Effects. No cumulative effects on historic buildings and other structures (as defined earlier in this chapter, p. 139) have been identified.

Conclusion. Implementing alternative 2 would result in a mixture of actions — unused buildings would be stabilized and preserved, which would slow the loss of historic fabric. Rehabilitating structures for adaptive use by the national battlefield or by others under the historic leasing program would likely result in no adverse effect on those historic structures, depending on the nature of the changes.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 3

Analysis. Stabilizing historic structures not used for interpretation or national battlefield operations to preserve them

and protect them from further deterioration would result in no adverse effects on the structures.

Opening the Worthington House to the public for interpretive services could involve adding floor bracing to increase its weight-bearing capacity and adding electrical systems and heating, ventilation, and air conditioning (HVAC) systems. The structure also would need to be made accessible for visitors with disabilities. The Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* would be followed to insure that no adverse effects on the structure's historic fabric occur.

Rehabilitating the exterior of the Best House would benefit preservation of the structure and would result in no adverse effect. Rehabilitating the first floor of the interior for interpretive exhibits would involve assessing its condition and weight-bearing capacity. Should that assessment indicate that more interior bracing is needed to support visitation, structural supports would be integrated into the existing historic fabric to the greatest extent possible. Electrical and HVAC systems also would be needed, as would changes to make the structure accessible for visitors with disabilities. All rehabilitation would be undertaken in keeping with the Secretary of the Interior's *Standards and Guidelines* to insure against any adverse effect.

Adaptive reuse of the interior of the Thomas House for administrative offices would retain all significant interior features and would not alter its internal configuration. Rehabilitating

the existing utility systems would be necessary, but this should cause no adverse effects on the structure.

The stone tenant house on the Thomas Farm has been significantly altered inside. Rehabilitating it for exhibits would not result in an adverse effect.

The ongoing access to and maintenance of commemorative monuments would have no effect on historic properties.

The internal spaces of the Gambrill Mill already have been altered from their historic condition, and little historic fabric remains. Using the basement of the mill for classrooms or programs and the second floor for offices would represent a change from one nonhistoric use to another. Therefore, this alternative would result in no effect on this structure.

Cumulative Effects. No cumulative effects on historic buildings and other structures (as defined earlier in this chapter, p. 139) have been identified.

Conclusion. In alternative 3, stabilizing presently unused historic buildings would slow the natural deterioration processes significantly, resulting in no adverse effects. Modifying some buildings to allow for visitor access would be accomplished in a manner designed to retain the integrity of historic structures.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal

in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 4 (Preferred Alternative)

Analysis. Stabilizing historic structures not used for interpretation or national battlefield operations would result in no adverse effects on the structures.

Opening the Worthington House to the public for interpretive services could involve adding floor bracing to increase its weight-bearing capacity and adding electrical systems and heating, ventilation, and air conditioning (HVAC) systems. The structure also would need to be made accessible for visitors with disabilities. All work would be undertaken in such a manner as to retain the structures' integrity, resulting in no adverse effect.

Adaptive reuse of the interior of the Thomas House for administrative offices would retain all significant interior features and would not alter its internal configuration. Rehabilitating the existing utility systems would be necessary, but this should cause no adverse effects on the building.

The stone tenant house on the Thomas Farm has been substantially altered inside. Rehabilitating it for exhibits would not result in an adverse effect.

Rehabilitating the exterior of the Best House would result in no adverse effect on the structure. Preserving the interior of the secondary house on the Best Farm for limited visitor access to the ground

floor would result in no adverse effects on that structure.

The internal spaces of the Gambrill Mill already have been altered and little historic fabric remains. Using the first floor of the mill for classrooms and the second floor for offices would simply represent a change from one nonhistoric use to another. Therefore, alternative 4 would result in no adverse effect on the interior of this structure.

Cumulative Effects. No cumulative effects on historic buildings and other structures (as defined earlier in this chapter, p.139) have been identified.

Conclusion. In alternative 4, stabilizing and preserving unused buildings would slow the natural deterioration processes significantly, resulting in no adverse effects.

Adaptively reusing the Thomas and Worthington houses, the Thomas stone tenant house, and the Gambrill Mill for interpretation or for national battlefield operations would not result in adverse effects.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

EFFECTS ON CULTURAL LANDSCAPES

Cultural Landscapes Defined

A cultural landscape is a reflection of human adaptation to the environment and the use of its natural resources. Such a landscape develops from the interrelationships of human-derived and natural component features such as general land use patterns, natural topography, scale, spatial organization, boundaries, vegetation, and the arrangement of circulation features such as roads.

Cultural landscapes reflect a community's values and traditions, and through time they constitute a visual chronicle of changes. The dynamic nature of cultural landscapes results from forces such as politics, property laws, technology, and economic conditions. Cultural landscapes are an unparalleled source of information about the times of their development, and they can offer a dynamic view back through time that is nonetheless intimately connected to the present.

Effects from Alternative 1 (No Action)

Analysis. The cultural landscape's circulation patterns, topographic features, watercourses, and land use would not be altered under this alternative. However, historic structures would be stabilized and preserved, resulting in no adverse effect on the viewshed and the integrity of landscapes.

The continuing maintenance of agricultural fields through special use

permits would benefit the historic landscape, resulting in no adverse effect.

Continuing the approaches and parking for the 14th New Jersey Monument and the commemorative area along Araby Church Road unchanged would not result in any adverse effect on these landscapes. The possibility of placing any new monuments in the national battlefield would be addressed individually, and NPS policies would be followed. However, the effect on the landscape from any new monuments could range from no adverse effect to adverse effect, depending on the design and placement of the monument.

Cumulative Effects. Interstate Highway 270 was constructed in the early 1950s, before a boundary for Monocacy National Battlefield was established. The highway bisected the battlefield, effectively separating the eastern and western halves physically and visually. This separation continues to represent a major adverse effect on the cultural landscape.

The proposed widening of I-270 would adversely affect the cultural landscape of Monocacy National Battlefield if national battlefield lands were needed for widening. Visual impacts probably would be increased by this action; the setting of several historic structures already is diminished by the highway.

Conclusion. The no-action alternative would continue a generally beneficial program of stabilizing unused historic buildings, maintaining historic roads and trails, and maintaining agricultural or other rural features. Implementing alternative 1 would result in no adverse effect on the cultural landscape.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 2

Analysis. The topographic features and watercourses of the cultural landscape would not be altered under alternative 2, nor would land use. Stabilizing and preserving farm structures in their current condition on the Best, Thomas, and Lewis farmsteads would help to preserve the historic landscape and contribute to its long-term maintenance. These actions would benefit the cultural landscapes and would result in no adverse effect.

Improving the historic lane to include a deck over I270 connecting the Worthington and Thomas farms would re-establish part of the historic circulation pattern on the battlefield, a beneficial effect. However, improving the road to meet current standards would make it more visible on the landscape. Coupled with the occasional presence of automobiles using the lane, there could be a visual effect on the landscape. That effect would likely not be adverse.

Adding a parking area would not adversely affect the historic view because this feature would be situated

adjacent to the already intrusive modern interstate.

Extending a pedestrian trail from the visitor center to Monocacy Junction and Wallace's Headquarters would require construction of a bridge over Bush Creek and a trail or boardwalk under the railroad bridge. It would be designed to fit into the landscape and not be visible or intrusive from the main visitor areas. It would not result in an adverse effect on the cultural landscape.

Locating a visitor parking area for the Thomas Farm would result in no adverse effect on the cultural landscape as it would be next to Baker Valley Road and on the edge of the historic landscape. Building new restroom facilities inside the nonhistoric cinderblock structure would have no effect on the cultural landscape.

Removing the nonhistoric cinder block house on Araby Church Road and rehabilitating the site would enlarge the commemorative area around the Pennsylvania and Vermont memorials. The effect would not be adverse. Placing any future monuments at this location would retain the commemorative character of the battlefield and follow the historic pattern of erecting memorials along the old turnpike. The effect would not be adverse.

Adopting guidelines for the placement of any future monuments within the national battlefield would ensure that they would complement the design, scale, and materials of existing monuments. The possibility of placing any new monuments in the national battlefield would be addressed individually, and NPS policies would be

followed. The effect would not be expected to be adverse.

Shifting the entrance to the 14th New Jersey Monument south and upgrading the parking lot from its current condition would greatly improve its appearance and result in no adverse effect on this landscape.

Cumulative Effects. Interstate Highway 270 was constructed in the early 1950s, before a boundary for Monocacy National Battlefield was established. The highway bisected the battlefield, effectively separating the eastern and western halves physically and visually. This separation continues to represent a major adverse effect on the cultural landscape.

The proposed widening of I-270 would adversely affect the cultural landscape of Monocacy National Battlefield if national battlefield lands were needed for the widening. Overall, the widening probably would increase the visual impacts that already diminish the setting of several historic structures.

Constructing a deck across I-270 could reduce the adverse visual impacts on the important viewshed between the Worthington and Thomas houses from added highway lanes. The deck would not be visible from elsewhere in the historic landscape, or it would be visible only from the nonhistoric landscape along the Worthington lane. The overall effect would not be adverse.

The actions of alternative 2 (stabilizing buildings, continuing to maintain roads, trails, and historic fence lines, and maintaining agricultural or other rural features that constitute much of the

historic viewshed), along with the known past, current and reasonably foreseeable future actions inside and outside of the national battlefield, would be beneficial and would result in no adverse effect on the cultural landscape.

Conclusion. Stabilizing and preserving historic buildings under alternative 2 would ensure their long-term presence on the historic landscape and would result in no adverse effect on the cultural landscape.

Introducing a nonhistoric deck to cross Interstate Highway 270 would reestablish the viewshed by restoring historic vegetative patterns on the deck and by disguising the modern disruption of the interstate highway below. These changes would result in no adverse effect on the cultural landscape, but the deck would be a modern intrusion.

Developing trails and improving roads in the battlefield would not cause an adverse impact on the overall cultural landscape because the trails and roads would be placed on existing alignments.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 3

Analysis. The circulation patterns, topographic features, and watercourses of the cultural landscape would not be altered under alternative 3, nor would land use. Stabilizing and preserving farm structures in their current condition would help preserve the historic landscape and contribute to its long-term maintenance. These actions would benefit the cultural landscapes and would result in no adverse effect.

Widening the nonhistoric entry lane to the Worthington farm from Baker Valley Road and adding a new parking area would have no adverse effect on this historic landscape because these improvements would be situated adjacent to the modern interstate on already disturbed land.

More automobile traffic and parking at the Thomas House (after its adaptation for administrative offices) would not adversely affect the cultural landscape. The entry road would follow the historic route. The parking area would be at a considerable distance from the historic structures in an area already disturbed.

Continued use of the Gambrill Mill and the maintenance facility would not affect the cultural landscape.

Removing the nonhistoric cinder block house along Araby Church Road and relandscaping would remove an intrusive element from the landscape and enhance the commemorative nature of the area. The impact would not be adverse.

Reconfiguring the access to the 14th New Jersey Monument, closing the present parking area, and adding a trail

under MD 355 from a new parking area on the east side would result in no adverse effects on the historic landscape. The new site is hidden from view below the MD 355 bridge and by vegetation.

Adopting guidelines that prohibit placement of any future monuments within the national monument would have no effect on the existing cultural landscape.

Cumulative Effects. Interstate Highway 270 was constructed in the early 1950s, before Monocacy National Battlefield was established. The highway bisected the battlefield, effectively separating the eastern and western halves physically and visually. This separation continues to represent a major adverse effect on the cultural landscape.

The proposed widening of I-270 could adversely affect the cultural landscape of Monocacy National Battlefield if national battlefield lands were needed for the widening. Overall, the widening probably would increase the visual impacts that already diminish the setting of several historic structures.

The actions of alternative 3 (stabilizing buildings, continuing to maintain roads, trails, and historic fence lines, and maintaining agricultural or other rural features that constitute much of the historic viewshed), along with the known past, current, and reasonably foreseeable future actions inside and outside of the national battlefield, would be beneficial and would result in no adverse effect on the cultural landscape.

Conclusion. Stabilizing and preserving historic structures would ensure their long-term presence on the historic

landscape. Combined with past, present, and reasonably foreseeable future actions, implementing alternative 3 would result in no adverse effect on the cultural landscape.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

Effects from Alternative 4 (Preferred Alternative)

Analysis. The circulation patterns, topographic features, and watercourses of the cultural landscape would not be altered under alternative 4, nor would land use. Stabilizing and preserving farm structures in their current condition on the Best, Thomas, and Lewis farmsteads would help preserve the historic landscape and contribute to its long-term maintenance. These actions would benefit the cultural landscape and would result in no adverse effect.

Widening the modern entry lane to the Worthington farm from Baker Valley Road and adding a new parking lot would result in no adverse effect on this historic landscape because these improvements would be situated adjacent to the modern interstate on already disturbed lands.

Constructing a pedestrian deck across I-270 between the Worthington and

Thomas farms would not adversely affect the cultural landscape because it would not be visible from either the Worthington House or the Thomas farmstead and would take advantage of vegetation on either side of I-270.

Shifting the entrance to the 14th New Jersey Monument south and upgrading the parking lot from its current condition would greatly improve its appearance and result in no adverse effect on this landscape.

Removing the nonhistoric cinder block house on Araby Church Road and rehabilitating the site would enlarge the commemorative area around the Pennsylvania and Vermont memorials. The effect would not be adverse. Placing any future monuments at this location would retain the commemorative character of the battlefield and follow the historic pattern of erecting memorials along the old turnpike. The effect would not be adverse.

Cumulative Effects. Interstate Highway 270 was constructed in the early 1950s, before Monocacy National Battlefield was established. The highway bisected the battlefield, effectively separating the eastern and western halves physically and visually. This separation continues to represent a major adverse effect on the cultural landscape.

The proposed widening of I-270 could adversely affect the cultural landscape of Monocacy National Battlefield if national battlefield lands were needed for the widening or if the trees that buffer its appearance and noise were to be removed. Overall, the widening probably would increase the visual

impacts that already diminish the setting of several historic structures.

Constructing a pedestrian deck across I-270 would likely not be visible from either the Worthington or Thomas farmsteads and therefore would not have an adverse effect.

The actions of alternative 4 (stabilizing buildings, continuing to maintain roads, trails, and historic fence lines, and maintaining agricultural or other rural features that constitute much of the historic viewshed), along with the known past, current, and reasonably foreseeable future actions inside and outside of the national battlefield, would be beneficial and would result in no adverse effect on the cultural landscape.

Conclusion. Stabilizing and preserving unused historic buildings under alternative 4 would ensure their long-term presence on the historic landscape. Removing nonhistoric structures would also restore the historic landscape to its historic condition. These actions would result in no adverse effect.

Adding a pedestrian deck across I-270 would allow visitors to walk between the Worthington and Thomas farms, reconnecting them along the historic lane that once connected them. It would likely not be visible from either farmstead and would not have an adverse effect.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal

in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

EFFECTS ON VISITOR USE AND EXPERIENCE

EXPERIENCING THE RESOURCES

Monocacy National Battlefield opened in 1991 with a staff of three housed in a visitor contact station on the ground floor of the Gambrill Mill. There were approximately 8,000 visitors the first year. The visitor experience consisted of exhibits in the contact station, one-to-one discussions with an interpreter and three automobile stops along MD 355 and Araby Church Road, where monuments had been erected to commemorate the battle. As time permitted, an interpretive ranger would offer programs for school groups and local organizations.

An interpretive loop trail was opened at the Gambrill Mill in 1994. From that trail, visitors could see the MD 355 and railroad bridges. The national battlefield staff constructed a trail system on the Worthington Farm in 1997, as well as a small parking lot at the beginning of the Worthington Lane, along Baker Valley Road. Wayside exhibits were added to selected areas of the battlefield in 2002.

Today, with acquisition of the battlefield nearly complete, most Monocacy National Battlefield visitors come to the new visitor center (completed 2007). They may walk on the Gambrill Mill trail, drive to the three areas of Civil War monuments, or to the Worthington Farm parking area. Along the way they may look out over the battlefield landscape. Not all properties are open, and no historic structures are open to visitors.

The new visitor center (described in detail on page 46) offers orientation and

educational exhibits that have not been available at the national battlefield. At present visitors may need extensive individual interaction with a ranger to understand the background and course of the battle. The new visitor center contains appropriate exhibits that explain why the battle occurred here, how it unfolded, its effect on the soldiers and the local community, and its impact on the Civil War. Although interaction with national battlefield staff will remain important, visitors are able to leave the new visitor center with enough information to have made their visit educational and enjoyable.

For daytime use, Monocacy National Battlefield appeals primarily to visitors interested in history. Some fishermen visit along the Monocacy River, and many local visitors walk on the existing trails at the Gambrill Mill and the Worthington Farm for exercise. Few bicyclists come to the national battlefield because it is difficult to negotiate the busy MD 355 and because there is no trail system connecting areas of the battlefield that would appeal to cyclists. No designated picnic areas have been established, and there are no campgrounds in the national battlefield.

As Monocacy National Battlefield has become known, visitation has increased — in 2003 there were 14,781 visitors. It is anticipated that visitation will grow substantially with the new visitor center.

METHODS FOR ASSESSING EFFECTS ON THE VISITOR EXPERIENCE

In this impact analysis, various aspects of visitor use and experience at Monocacy National Battlefield have been considered, including the effects on orientation, circulation and access, safety, opportunities for interpretation, and visitors' experience of the resources. The analysis is based on how visitor use and experiences would change with the ways in which management prescription would be applied in the alternatives. The analysis is primarily qualitative rather than quantitative because the alternatives are conceptual.

Duration

In this analysis, a short-term effect is one that would last less than one year, in only one season's use by visitors. A long-term effect would be more likely to be permanent, lasting more than one year.

Intensity

The effects were evaluated comparatively between alternatives, with the no-action alternative serving as a baseline for comparison with each action alternative

Negligible — Visitors probably would be unaware of any effects caused by implementing the alternative.

Minor — The changes in visitor use or the visitor experience would be slight but detectable, few visitors would be affected, and the action would not appreciably limit or enhance experiences identified as fundamental to the

national battlefield's purpose or significance.

Moderate — Some characteristics of visitor use or the visitor experience would be changed by the action, and many visitors would be aware of the effects associated with implementing the action; some changes to experiences identified as fundamental to the national battlefield's purpose or significance would be apparent.

Major — Multiple characteristics of the visitor experience would be changed by the action, including experiences identified as fundamental to the national battlefield's purpose or significance; most visitors would be aware of the effects associated with implementing the action.

Type of Effect

Adverse effects are those that most visitors would perceive as undesirable. *Beneficial* effects are those that most visitors would perceive as desirable.

EFFECTS FROM ALTERNATIVE 1 (NO ACTION)

Analysis

Orientation. Visitors would be oriented to the national battlefield by uniformed park staff at the new visitor center, by maps, brochures and signs. Some visitors arriving by scheduled bus tour may receive their orientation on the bus by an NPS staff interpreter.

Implementation of this alternative would have a negligible long-term beneficial effect on visitor orientation.

Safety. Traffic and posted vehicle speeds of 50 mph on MD 355 would continue to make negotiating the local road system difficult and dangerous for park visitors. Housing and commercial development south of the national battlefield has led to more vehicles using the highway exacerbating the future situation.

This alternative would have the National Park Service work with the Maryland State Highway Administration to implement appropriate measures to lessen the dangers inherent when slow-moving NPS visitors and swift-moving local traffic use the same roads. The alternative would do nothing to improve access or egress to major interpretive features such as Gambrill Mill or the 14th New Jersey Monument.

Implementation of this alternative would have a major long-term adverse impact on visitor safety.

Interpretation. Interpretation of the national battlefield would rely heavily on the visitor center. Roving interpreters, brochures, and several wayside exhibits would supplement interpretive stories told at the visitor center. None of the major historic structures on the landscape would be open to visitation.

Implementation of this alternative would have a minor, long-term, beneficial effect on interpretation of the resources.

Visitors' Experience of the Resources. Visitors would be able to walk the grounds and trails at the Best, Worthington, and Thomas farmsteads and the Gambrill Mill. Alternative 1 would not permit visitor access to the Lewis, or

Baker farms, to the interiors of the Gambrill Mill, the Best, Worthington, or Thomas houses, or to the railroad junction and Wallace's headquarters. These sites would continue to undergo preservation so that they would remain important landscape features.

Implementation of this alternative would have a minor, long-term beneficial effect on the visitor's experience of the resources.

Cumulative Effects

As has been mentioned previously (p. 46), the new visitor center is considered a part of the existing conditions in the national battlefield, and its presence is part of the actions common to all alternatives.

Previously, visiting Monocacy National Battlefield consisted of stopping along MD 355 and Araby Church Road at monuments dedicated to the soldiers who fought in the battle and looking out over the farm fields where the battle occurred. When the National Park Service opened the visitor contact station in 1991, this gave some context to the story of the battle. Over the years, several trails have been opened and rangers have led group tours, but many of the battle sites have remained inaccessible, and the historic structures have not been open to most visitors.

With the new visitor center, NPS interpreters have a major focus for interpreting the battlefield. This improves the visitors' understanding of the battle, even without the ability to enter any of the historic farmhouses that are so prominent on the landscape. In combination with other historic

properties in the vicinity (Antietam National Battlefield, Harper's Ferry National Historical Park, South Mountain Battlefield State Park, the National Museum of Civil War Medicine, and others) visitors could get a good understanding of the Civil War and its impact on Maryland.

Implementation of this alternative in combination with actions of entities outside the national battlefield would result in long-term minor to moderate cumulative beneficial effect on public understanding and appreciation of the meaning and significance of the region's history.

Ongoing historical and archeological research would continue to improve the quality of the presentations and exhibits available to visitors. In addition to the research conducted by the national battlefield, opportunities for research and education are available through regional universities, local schools, and other organizations. All these activities would result in long-term minor beneficial cumulative effects on regional opportunities for interpretation and education.

Commercial and residential development outside the national battlefield when combined with traffic generated by visitors to the national battlefield would cause an increase in congestion and traffic related accidents on roads within and around Monocacy National Battlefield. Together development and visitor related traffic would have a long-term, moderate to major cumulative adverse impact on circulation and access within the national battlefield.

It has been proposed that a state-of-the-art, environmentally friendly State of Maryland visitor facility be created at the existing I-270 overlook south of the national battlefield. This could encourage visitors to stop at the national battlefield, either as a part of their current trip or at a later date. The long-term effect caused by such a facility would be negligible to minor and beneficial.

Conclusion

Implementation of this alternative would have a negligible long-term beneficial effect on visitor orientation, a major long-term adverse impact on visitor safety, a minor, long-term, beneficial effect on interpretation of the resources, and a minor, long-term beneficial effect on the visitor's experience of the resources.

EFFECTS FROM ALTERNATIVE 2

Analysis

Orientation. Visitors would be oriented to the national battlefield by uniformed park staff at the new visitor center, by maps, brochures and signs. Some visitors arriving by scheduled bus tour may receive their orientation on the bus by an NPS interpreter.

An alternative transportation system would be employed to move visitors around the national battlefield. When operating, it would provide an additional level of orientation through an automated system of messages. At times a uniformed ranger would also be available on the system to answer questions.

Implementation of this alternative would have a long-term, moderate beneficial effect on visitor orientation.

Safety. Adding a deck over I-270 would improve the safety of national battlefield visitors, eliminating the need for them to backtrack down Worthington Lane onto Baker Valley Road when going from one farm to the other.

Shifting the entrance for the 14th New Jersey Monument south to allow better sight lines north and south would greatly improve the safety of visitors entering and leaving the busy MD 355.

To improve the safety of access to the Union entrenchments and Wallace's headquarters on the north side of the CSX railroad, an underpass would be constructed along the edge of the Monocacy River.

The alternative transportation system would provide an additional level of visitor safety as visitors would no longer be expected to navigate the site through heavy local traffic.

The impact of the implementation of this alternative would be a long-term, major beneficial effect on visitor safety.

Interpretation. The most impressive opportunity for interpretation under alternative 2 would be the deck that would be added over I-270 between the Worthington and Thomas farms, visually reconnecting the two farms with agricultural land, fence rows, and a farm lane. Because much of the battle occurred between these two farms, returning the area to an agricultural appearance would return it to its historic condition without the intrusion of an interstate highway and speeding

vehicles. Visitors could drive directly from one farm to the other, following the route many Confederate soldiers took as they overran the site.

Under alternative 2 visitors could go to the railroad junction, the site of Wallace's headquarters, and the Union entrenchments — three important locations for understanding why the battle occurred here. Exhibits would be available at the stone tenant house on the Thomas Farm, supplementing those at the visitor center.

The impact of the implementation of this alternative would be a long-term, major, beneficial effect on visitor interpretation.

Visitors' Experience of the Resources.

In alternative 2, national battlefield visitors wanting to understand the Battle of Monocacy could see a wide range of landscape features, supplemented by exhibits at the visitor center and the stone tenant house on the Thomas Farm. Waysides along existing and new trails would interpret the unfolding battle and other points of interest. Visitors interested in the history of the site beyond the Civil War could receive that information primarily at the visitor center and the stone tenant house. None of the historic houses would be open for visitation.

The impact of the implementation of this alternative on the overall visitor experience would be long-term, major and beneficial.

Cumulative Effects

As has been mentioned previously (p. 46), the new visitor center is considered

a part of the existing conditions in the national battlefield, and its presence is part of the actions common to all alternatives.

Efforts to interpret the heritage of western Maryland on the part of federal, state, and private entities (Antietam National Battlefield, Harpers Ferry National Historical Park, the C&O Canal National Historical Park; South Mountain Battlefield State Park, Maryland Civil War Trails; National Museum of Civil War Medicine), along with the national battlefield staff, would result in long-term minor to moderate beneficial cumulative effects on public understanding and appreciation of the region's history. The contribution of the National Park Service to this result would be long term, moderate, and beneficial.

In addition to the beneficial effects of research, education, interpretation, and preservation efforts ongoing and proposed at the national battlefield, a number of other government and nonprofit sites in the area engage in similar activities. Regional universities, local schools, and other organizations offer opportunities for research and education. All these activities would result in long-term minor to moderate beneficial cumulative effects on regional opportunities for interpretation and education.

Traffic in and around the battlefield would increase, both from greater visitation and from the growth of surrounding communities. This would add to the roadway congestion. When the visitor transportation system was not operating, local drivers would have to be

more vigilant, watching for slower-moving visitors, who would be less familiar with the road system. Visitors would need to watch for faster-moving local drivers using the same road system. The cumulative long-term effect on the visitor experience and on local roadway users would be moderate to major and beneficial, depending on the local rush hour characteristics and weather conditions.

Constructing a deck over I-270 as partial mitigation for the widening of I-270 would improve the flow of visitors in the national battlefield. It also would make the egress back onto Baker Valley Road at the Thomas Farm safer and more visible than from Worthington Lane. The cumulative long-term effect on the visitor experience would be moderate and beneficial. For local users of Baker Valley Road, the cumulative long-term effect would be minor and beneficial.

It has been proposed that a state-of-the-art, environmentally friendly State of Maryland visitor facility be created at the existing I-270 overlook south of the national battlefield. This could encourage visitors to stop at the national battlefield, either as a part of their current trip or at a later date. The long-term effect caused by such a facility would be negligible to minor and beneficial.

Conclusion

Implementation of this alternative would have a moderate long-term beneficial effect on visitor orientation, a major long-term beneficial impact on visitor safety, a major, long-term, beneficial effect on interpretation of the

resources, and a major, long-term beneficial effect on the visitor's experience of the resources.

EFFECTS FROM ALTERNATIVE 3

Analysis

Orientation. Visitors would be oriented to the national battlefield by uniformed park staff at the new visitor center, maps, brochures, and signs. Some visitors arriving by scheduled bus tour may receive their orientation on the bus by a park staff interpreter.

Implementation of this alternative would have a negligible long-term beneficial effect on visitor orientation.

Safety. With no deck over I-270 visitors would need to backtrack down Worthington Lane onto Baker Valley Road when traveling from one farm to the other.

With no alternative transportation system visitors would have to concentrate on the logistics of getting around the national battlefield. This is especially important for the part of the route that follows the busy MD 355. The speed limit on that road is 50 mph, and it is heavily used by commuters and local residents. Ongoing commercial and residential development south of the national battlefield would make conflicts between slow-moving visitors and fast-moving through traffic more likely at several locations with sharp turns, where slow-moving visitors and heavy traffic combine.

Shifting the entrance to the 14th New Jersey Monument to the east side of MD 355 and adding a new parking area, with a short trail under the MD 355 bridge

leading to the monument, would improve visitor safety.

Implementation of this alternative would have a long-term, moderate adverse effect on visitor safety.

Interpretation. Visitors would receive most of their interpretation at the visitor center. Additional interpretive exhibits would be available at the Best House, the Thomas Stone Tenant House, and at the Worthington House. Waysides would also provide some interpretation along trails.

There would be no deck over I-270 in Alternative 3. Trees along both sides of I-270 would block the view from the Worthington to the Thomas farms. This would make interpreting the connection between the two farms during the battle more difficult. Because much of the battle took place between the two farms, returning the area to an agricultural appearance would return it to its historic condition with less of the noise intrusion of an interstate highway and speeding vehicles.

Only alternative 3 would offer an opportunity for visitors to see the interior of the Best farmhouse or the landscape of the Lewis farm. Exhibits would be complementary to those in the visitor center. Several outbuildings also would be open to visitors, or they could see them through windows.

The stone tenant house on the Thomas farm would have exhibits supplementing those at the visitor center. The Worthington House first floor would contain exhibits about the war and the family that occupied the house during the battle.

The effect of implementation of this alternative on resource interpretation would be long-term, moderate, and beneficial.

Visitors' Experience of the Resources.

In alternative 3, national battlefield visitors wanting to understand the Battle of Monocacy could see a wide range of landscape features, supplemented by exhibits at the visitor center, Best Farm, Worthington House, and the stone tenant house on the Thomas Farm. Wayside exhibits along existing and new trails would interpret the unfolding battle and other points of interest.

Although the trails would not be designed primarily for recreational use, under alternative 3 visitors could walk the trails to fish in the river or to observe wildlife. Other recreational uses such as horseback riding and bicycling would not be allowed.

The effect of implementation of this alternative on visitor's experience of the resources would be long-term, moderate, and beneficial.

Cumulative Effects

As has been mentioned previously (p. 46), the new visitor center is considered a part of the existing conditions in the national battlefield, and its presence is part of the actions common to all alternatives.

Efforts to interpret the heritage of western Maryland on the part of federal, state, and private entities (Antietam National Battlefield, Harpers Ferry National Historical Park, the C&O Canal National Historical Park; South Mountain Battlefield State Park,

Maryland Civil War Trails; National Museum of Civil War Medicine), along with the national battlefield staff, would result in long-term minor to moderate beneficial cumulative effects on public understanding and appreciation of the region's history. The contribution of the National Park Service to this result would be long term, moderate, and beneficial.

In addition to the beneficial effects of research, education, interpretation, and preservation efforts ongoing and proposed at the national battlefield, a number of other government and nonprofit sites in the area engage in similar activities. Regional universities, local schools, and other organizations offer opportunities for research and education. All these activities would result in long-term minor to moderate beneficial cumulative effects on regional opportunities for interpretation and education.

Commercial and residential development outside the national battlefield when combined with traffic generated by visitors to the national battlefield would cause an increase in congestion and traffic related accidents on roads within and around Monocacy National Battlefield. Together development and visitor related traffic would have a long-term, moderate to major cumulative adverse impact on circulation and access within the national battlefield.

The creation of a state-of-the-art, environmentally friendly State of Maryland visitor facility has been proposed outside the national battlefield. Such a feature would be placed at the existing I-270 overlook south of the

national battlefield. This could encourage visitors to stop at the national battlefield either as a part of their current trip or at a later date. The long-term effect caused by such a facility would be negligible to minor and beneficial.

Conclusion

The effect of implementation of this alternative on orientation would be negligible long-term and beneficial. On visitor safety the effect would be moderate long-term and adverse. On interpretation the effect would be moderate long-term and beneficial. On the visitor experience of the resource the effect would be moderate long-term and beneficial.

EFFECTS FROM ALTERNATIVE 4 (PREFERRED ALTERNATIVE)

Analysis

Orientation. Visitors would be oriented to the national battlefield by uniformed park staff at the new visitor center, by maps, brochures, and signs. Some visitors arriving by scheduled bus tour may receive their orientation on the bus by a park staff interpreter.

Implementation of this alternative would have a negligible long-term beneficial effect on visitor orientation.

Safety

With no alternative transportation system visitors would have to concentrate on the logistics of getting around the national battlefield. This is especially important for the part of the route that follows the busy MD 355. The speed limit on that road is 50 mph, and it is

heavily used by commuters and local residents. Ongoing commercial and residential development south of the national battlefield would make conflicts between slow-moving visitors and fast-moving through traffic more likely at several locations with sharp turns, where slow-moving visitors and heavy traffic combine.

Shifting the entrance to the 14th New Jersey Monument farther south would provide a safer place for vehicles to enter and leave the site.

The effect of implementation of this alternative on visitor safety would be a minor long-term, adverse effect.

Interpretation. Visitors would receive most of their interpretation at the visitor center. Additional interpretive exhibits would be available at the Thomas Stone Tenant House, and at the Worthington House. Waysides would also provide some interpretation along trails.

There would be a pedestrian deck over I-270 in Alternative 4, much smaller and less visible from either the Worthington or Thomas sides. Trees along both sides of I-270 would continue block the view from the Worthington to the Thomas farms. This would make interpreting the connection between the two farms during the battle more difficult. Because much of the battle took place between the two farms, returning the area to an agricultural appearance would return it to its historic condition with less of the noise intrusion of an interstate highway and speeding vehicles.

The stone tenant house on the Thomas farm would have exhibits supplementing those at the visitor center. The

Worthington House first floor would be rehabilitated to offer interpretive services and exhibits for visitors.

The effect of implementation of this alternative on interpretation would be long-term, moderate, and beneficial.

Visitors' Experience of the Resources.

In alternative 4, national battlefield visitors wanting to understand the Battle of Monocacy could see a wide range of landscape features, supplemented by exhibits at the visitor center and the stone tenant house on the Thomas Farm. The battlefield would appear remarkably similar to the way it looked during the Civil War.

Wayside exhibits along existing and new trails would interpret the unfolding battle and other points of interest.

Visitors interested in the history of the site beyond the Civil War could explore those stories through exhibits at the Worthington farmhouse and the Thomas stone tenant house.

Although the trails would not be designed primarily for recreational use, under alternative 4 visitors could walk the trails to fish in the river or to observe wildlife. Other recreational uses such as horseback riding and bicycling would not be allowed.

The effect of the implementation of this alternative on visitor experience of the resources would be long-term, moderate, and beneficial.

Cumulative Effects

As has been mentioned previously (p. 46) the new visitor center is considered a part of the existing conditions in the national battlefield, and its presence is

part of the actions common to all alternatives.

Efforts to interpret the heritage of western Maryland on the part of federal, state, and private entities (Antietam National Battlefield, Harpers Ferry National Historical Park, the C&O Canal National Historical Park; South Mountain Battlefield State Park, Maryland Civil War Trails; National Museum of Civil War Medicine), along with the national battlefield staff, would result in long-term minor to moderate beneficial cumulative effects on public understanding and appreciation of the region's history. The contribution of the National Park Service to this result would be long term, moderate, and beneficial.

In addition to the beneficial effects of research, education, interpretation, and preservation efforts ongoing and proposed at the national battlefield, a number of other government and nonprofit sites in the area engage in similar activities. Regional universities, local schools, and other organizations offer opportunities for research and education. All these activities would result in long-term minor to moderate beneficial cumulative effects on regional opportunities for interpretation and education.

Commercial and residential development outside the national battlefield when combined with traffic generated by visitors to the national battlefield would cause an increase in congestion and traffic related accidents on roads within and around Monocacy National Battlefield. Together development and visitor related traffic would have a long-

term, moderate to major cumulative adverse impact on circulation and access within the national battlefield.

The creation of a state-of-the-art, environmentally friendly State of Maryland visitor facility has been proposed outside the national battlefield. Such a feature would be placed at the existing I-270 overlook south of the national battlefield. This could encourage visitors to stop at the national battlefield either as a part of their current trip or at a later date. The long-term effect caused by such a facility

would be negligible to minor and beneficial.

Conclusion

The effect of implementation of this alternative on orientation would be negligible long-term and beneficial. On visitor safety the effect would be moderate long-term and adverse. On interpretation the effect would be moderate long-term and beneficial. On the visitor experience of the resource the effect would be moderate long-term and beneficial.

EFFECTS ON THE SOCIOECONOMIC ENVIRONMENT

METHODS FOR ASSESSING EFFECTS ON THE SOCIOECONOMIC ENVIRONMENT

The National Park Service applied logic, experience, expertise, and professional judgment to analyze the effects on the social and economic situation that would result from each alternative. Economic data, the history of visitor use, expected future visitor use, and future developments in the national battlefield were all considered in identifying, discussing, and evaluating the expected impacts.

The assessments of potential socioeconomic impacts were based on comparisons between the no-action alternative and each of the action alternatives.

Duration

In evaluating the effects, planners also considered the duration of each effect. Distinguishing between short-term and long-term duration was necessary to understand the extent of the identified effects. In general, short-term effects would be temporary—typically they are transitional effects associated with the implementation of an action (for example, effects related to construction activities). Such effects would last less than one year. In contrast, long-term effects would be those that would last more than a year, and they could be permanent (such as effects caused by operational activities).

Intensity

The effects were evaluated comparatively between alternatives, with the no-action alternative serving as a baseline for comparison with each action alternative

Negligible — The effect would be below or at the level of detection. The action would result in no noticeable change in any defined socioeconomic indicators.

Minor — The effect on socioeconomic conditions would be slight but detectable.

Moderate — The effects on socioeconomic conditions would be readily apparent, and the action would result in changes in socioeconomic conditions on a local scale.

Major — The effects on socioeconomic conditions would be readily apparent, and the action would result in demonstrable changes in socioeconomic conditions in the region.

Type of Effect

NPS policy calls for the effects of the alternatives to be characterized as being beneficial, adverse, or indeterminate. With respect to economic and social effects, few standards or clear definitions exist as to what constitutes a beneficial or positive change, what change should be considered adverse or negative.

For example, rising unemployment generally is perceived as adverse;

increases in job opportunities and average per capita personal income are regarded as beneficial. However, in many instances changes that some members of a community regard as favorable are seen as unfavorable by others. For example, the effect of growth on housing markets and values may be seen as favorable by construction contractors and many homeowners, but as adverse by renters, by local government officials, and by community groups concerned with affordability. Consequently, some social and economic effects may be described in such a manner as to allow an individual reviewer to determine whether they would be beneficial or adverse (the impact is indeterminate with respect to “type”).

EFFECTS FROM ALTERNATIVE 1 (NO ACTION)

Analysis

Monocacy National Battlefield is in a heavily developed part of the Baltimore–Washington metropolitan area. It has a small staff of less than 30 fulltime and seasonal employees. It is not a major travel and tourist destination in the region — it attracted fewer than 15,000 visitors in 2003. Visitation is expected to grow considerably now that the new visitor center is completed.

In 2001, when visitation was nearly 18,000 people, the National Park Service estimates that local daytime visitors made up 20% of total, day visitors from other regions made up 55%, and overnight visitors staying in hotels and campsites were 20% and 5%, respectively. On average, those visitors

spent \$114 per party per day, for an estimated \$1.03 million in 2001.

The \$1.03 million spent by Monocacy visitors had a direct economic effect of \$0.86 million in direct sales, \$0.32 million in personal income (wages and salaries), \$0.49 million in value added, and 20 jobs. Among all direct sales, \$0.29 million was from lodging sales, \$0.24 million from food and drinking places, \$0.11 million from admission fee and \$0.12 million from retail trade. As visitor spending circulated through the local economy, secondary effects created additional \$0.18 million in personal income and 7 jobs in the community.

In sum, visitors spent \$1.03 million dollars in 2001, which supported a total of \$1.34 million in sales, \$0.50 million in personal income, 26 jobs, and \$0.78 million in value added.

Under the no-action alternative the historic structures in the national battlefield would remain closed so that more staff would not be needed to interpret them. The maintenance staff could be increased slightly.

The time spent in the national battlefield by visitors is expected to increase by as much as one to two hours with the opening of the new visitor center.

The overall effect of the no-action alternative on socioeconomic conditions would be long-term, negligible, and beneficial when compared with the socioeconomics of Frederick County.

Cumulative Effects

The county economy is expected to benefit from development such as

expanded housing, industrial development, and retail expansion. The national battlefield contributes a negligible amount to the overall economic well-being of Frederick County when compared with the county as a whole. The workforce of the national battlefield is small compared to that of the county.

The direct and indirect economic impact from the national battlefield would be minor in comparison to the county as a whole. The new visitor center is likely to add somewhat to the number of dollars contributed into the local economy; however, the overall beneficial effect would continue to be negligible and long term.

Conclusion

Alternative 1 would result in both direct and indirect long-term negligible beneficial effects on the socioeconomic environment.

EFFECTS FROM ALTERNATIVE 2

Analysis

Adding new trails, upgrading roadways and parking areas, and adding new visitor facilities at the Thomas farm would result in one-time expenditures of funds in the local community.

The alternative transportation system (using existing roadways) and requiring visitors to use the system when it was operating would result in an ongoing economic benefit because operating and maintaining the system would result in several jobs. However, adding the transportation system would reduce visitors' flexibility to negotiate the national battlefield as they wished.

Leasing space in the community for national battlefield administration and maintenance would place federal dollars directly into the commercial real estate market. Placing the Best and Thomas houses into the historic leasing program would result in direct government competition in the commercial real estate market.

Visitation would increase as the battlefield facilities were developed under alternative 2. Visitors would stay longer at the battlefield and possibly also longer in the community, with a larger corresponding economic impact compared to the no-action alternative.

After the addition of visitor facilities at the stone tenant house on the Thomas Farm, and the development of new trails under this alternative, visitors probably would spend more time in the national battlefield. School groups and other large groups would be expected to increase after the first floor at the Gambrill Mill was converted into meeting space, and the groups also would be expected to stay longer.

Trail construction and use by visitors could result in a slight detrimental impact on agricultural leasing as agricultural land was removed for trails and as visitors and farmers came into contact during the planting and harvesting seasons.

Improving the highway near the 14th New Jersey Monument and reducing visitor traffic into the Gambrill Mill area probably would decrease the likelihood of accidents at those two locations.

Alternative 2 would result in more visitation than the no-action alternative,

along with more visitor spending in the community. NPS direct spending in the community would increase with more funds spent for construction services and materials and for leasing of space.

The staff of the national battlefield would be increased somewhat, with maintenance workers and interpreters needed to operate and maintain new facilities.

Overall, alternative 2 would result in direct and indirect long-term negligible beneficial effects when compared with the socioeconomic conditions of the entire Frederick County.

Cumulative Effects

The cumulative effects on the socio-economic environment from land uses and activities in the national battlefield and surrounding lands would be similar to those described for the no-action alternative. The overall cumulative effects would be long term, moderate, and beneficial. The contribution of alternative 2 to the cumulative effects would be long-term, negligible, and beneficial.

Conclusion

Alternative 2 would result in direct and indirect long-term negligible beneficial effects on the socioeconomic environment.

EFFECTS FROM ALTERNATIVE 3

Analysis

Several one-time expenditures of funds in the local community would result from implementing alternative 3 — parking upgrades, new visitor facilities,

moving the administrative headquarters to the Thomas Farm, and developing the first floors of the Worthington and Best houses to accommodate visitor access and exhibits.

School groups and other large groups would be expected to increase after the first floor at the Gambrill Mill was converted into meeting space, and the groups also would be expected to stay longer.

Visitation would increase as the battlefield facilities were developed under alternative 3. Visitors would stay longer at the battlefield and possibly also longer in the community, with a larger corresponding economic impact compared to the no-action alternative.

Improving the highway near the 14th New Jersey Monument and reducing visitor traffic into the Gambrill Mill area probably would decrease the likelihood of accidents in those areas.

Alternative 3 would result in more visitation than the no-action alternative, along with more visitor spending in the community. NPS direct spending in the community would increase with more funds spent for construction and demolition materials.

The staff of the national battlefield would be increased somewhat, with maintenance workers and interpreters needed to operate and maintain new facilities.

Overall, alternative 3 would result in direct and indirect long-term negligible beneficial effects when compared with the socioeconomic conditions of the entire Frederick County.

Cumulative Effects

The cumulative effects on the socio-economic environment from land uses and activities in the national battlefield and surrounding lands would be similar to those described for the no-action alternative. The overall cumulative effects would be long term, moderate, and beneficial. The contribution of alternative 3 to the cumulative effects would be long-term, negligible, and beneficial.

Conclusion

Alternative 3 would result in direct and indirect long-term negligible beneficial effects on the socioeconomic environment.

EFFECTS FROM ALTERNATIVE 4 (PREFERRED ALTERNATIVE)

Analysis

Alternative 4 would result in several one-time expenditures of funds in the local community — new roads, parking improvements, new visitor facilities at the Thomas and Worthington farms.

Visitation would increase under alternative 4 as battlefield facilities were developed at the Thomas and Worthington farms. Visitors would stay longer at the battlefield and possibly also longer in the community, with a larger corresponding economic impact compared to the no-action alternative. NPS direct spending in the community would increase, with more funds spent for construction and demolition materials.

Building a new entrance off of MD 355 for the 14th New Jersey Monument and reducing traffic into the Gambrill Mill

area probably would decrease the number of accidents in these locations.

The staff of the national battlefield would be increased somewhat, with maintenance workers and interpreters needed to operate and maintain new facilities.

Overall, alternative 4 would result in a long-term negligible beneficial effect when compared with the socioeconomic conditions of the entire Frederick County.

Cumulative Effects

The cumulative effects on the socioeconomic environment from land uses and activities in the national battlefield and surrounding lands would be similar to those described for the no-action alternative. The overall cumulative effects would be long term, moderate, and beneficial. The contribution of alternative 4 to the cumulative effects would be long term, negligible, and beneficial.

Conclusion

Alternative 4 would result in direct and indirect long-term negligible beneficial effects on the socioeconomic environment.

EFFECTS ON ACCESS AND CIRCULATION

METHODS FOR ASSESSING EFFECTS ON ACCESS AND CIRCULATION

Analyses of the potential effects on access and circulation were derived from the available information at Monocacy National Battlefield and the 2003 “Monocacy National Battlefield Transportation Plan” prepared by HNTB Corporation. The intensities of effects were defined as follows:

Negligible — The effect would be barely detectable, and there would be no discernible effect on local, regional, or battlefield transportation networks.

Minor — The action would cause a slightly detectable benefit or detriment to local, regional, or battlefield transportation networks.

Moderate — The action would result in a clearly detectable benefit or detriment to local, regional, or battlefield transportation networks.

Major — The action would result in a substantial, highly noticeable benefit or detriment to local, regional, or battlefield transportation networks.

EFFECTS FROM ALTERNATIVE 1 (NO ACTION)

Analysis

The no-action alternative would involve no proposed changes in local, regional, or battlefield transportation systems; however, urban sprawl and growth in Frederick County would continue to add traffic.

Cumulative Effects

The environmental assessment for the proposed relocation of the battlefield’s visitor center forecasted an increase in the battlefield’s visitation rate. It was projected that an increase of up to 40,000 visits per year would result from the area’s continued growth, the proposed visitor center, and the potential for partnership opportunities. This forecast is almost triple the visitation rate recorded in 2003.

Table 5 (copied from the NPS “Public Use Statistics” Web site) shows the annual visitation for Monocacy National Battlefield between 1991 and 2003.

TABLE 5: MONOCACY NATIONAL BATTLEFIELD ANNUAL VISITATION, 1991–2003

1991	0
1992	9,560
1993	8,251
1994	11,661
1995	21,165
1996	11,312
1997	11,804
1998	15,563
1999	14,834
2000	18,198
2001	18,095
2002	15,592
2003	14,566

Table 6 shows visitation to the battlefield by month during 2003.

**TABLE 6: MONOCACY NATIONAL
BATTLEFIELD VISITATION
BY MONTH, 2003**

Month	Visits
January	363
February	187
March	600
April	1,716
May	1,555
June	2,059
July	2,743
August	1,789
September	1,020
October	1,173
November	969
December	392
Total	14,566

To project changes in traffic volumes following the construction of the new visitor center, the following rationale has been developed:

The staff of Monocacy National Battlefield has observed that roughly 70% of visitation occurs during weekends. Using the total visits from the highest month in 2003 — July, 2,743 visits — take 70% of 2,743 = 1,920 visits; divide by 8 weekend days per month, this equals 240 people per day on an average weekend day during the peak use month of July. Assume an increase in visitation of 3, so $240 \times 3 = 720$. Assume 2.5 people per vehicle equals 288 cars per peak weekend day. Assume there will be 2 vehicle trips per visit, $2 \times 288 = 576$ (one to and from the battlefield). This equates to a future average daily traffic volume of 576 vehicle trips per day. Using the same method for establishing the current volume of traffic resulting from battlefield visitors, there

are 192 vehicle trips per day during the peak weekend day. Therefore, the resulting change in traffic volume is expected to be 384 vehicle trips per peak weekend day.

Urbana Pike (MD 355) is an already heavily traveled road (13,000 average daily traffic [ADT]). Even if visitation were to triple following the opening of the new visitor center, the percentage of daily traffic due to increased visitation is only projected to be 3%, compared to the current volume of traffic accommodated on MD 355. This would result in a minor long-term cumulative adverse impact on MD 355.

However, if visitation tripled, visitors traveling on Araby and Baker Valley roads, which are now low volume local roads (less than 1,100 ADT) potentially could increase the ADT of those roads by 35%. This would result in a cumulative moderate long-term adverse effect on Araby and Baker Valley roads.

Conclusion

Increased traffic resulting from more visitation to the national battlefield would cause minor long-term adverse impacts on MD 355. Increased visitor traffic would result in moderate long-term adverse impacts on the Araby Church and Baker Valley road networks.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal

in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

EFFECTS FROM ALTERNATIVE 2

Analysis

Visitors to Monocacy National Battlefield traveling on foot or by vehicle to battlefield features would benefit from alternative 2, a moderate long-term beneficial effect on access and circulation, as summarized below.

With the opening of the new visitor center, the flow of visitor travel to battlefield resources has been simplified. Left turn movements from MD 355 into the visitor center will be shifted north to an area where sight distance is better and the highway is wider. The visitor center would be the first stop for visitors; its location will allow visitors to reach the 14th New Jersey Monument and Araby Church Road by turning right off MD 355. This would make access to the battlefield features safer and help to eliminate confusion.

Moving national battlefield administration and maintenance to leased space outside the boundaries in alternative 2 would reduce the number of turns NPS vehicles would make from the Gambrill Mill drive from and onto MD 355. The access and circulation improvements that would be made to areas of the battlefield under alternative 2 would allow visitors to reach the Thomas Farm, Frederick Junction, Wallace's headquarters, and the earth-works north of the CSX railroad — areas that have been unavailable.

If market conditions allow and a willing vendor could be found, alternative 2 would include an alternative transportation system consisting of small bus-like vehicles that would carry visitors around the battlefield. The "Monocacy National Battlefield Transportation Plan" prepared by HNTB Corporation indicates that a small shuttle van service could be economically viable during the heaviest use periods. Using the system would be mandatory for visitors when the system was in operation; at other times, they could use their personal vehicles.

Adding a deck across I-270 would restore a vital connection between the Worthington and Thomas farms that was lost when the interstate highway was built, making it possible to drive along a one-way pattern between the farms, about where Union and Confederate troops engaged in some of the heaviest fighting. This would benefit access and circulation.

Upgrading a parking area on the Thomas Farm, along Baker Valley Road at the end of the lane would benefit access and circulation, as would improving parking near the 14th New Jersey Monument and shifting the entrance to the monument south to improve sight distances.

Adding trails in several areas — across the I-270 deck to let pedestrians go between the Thomas and Worthington farms, and from the visitor center to the railroad junction — as well as extending the Gambrill Mill trail across Bush Creek to where one can see the railroad junction would benefit visitors.

Alternative 2 would result in no appreciable change in visitation beyond that projected for the new visitor center. The greatest effect on visitation would result from the completion of the visitor center, but the enhanced interpretive opportunities from improved access to battlefield features under alternative 2 would increase each visitor's length of stay. This would not affect traffic volumes beyond those projected for the no-action alternative.

Cumulative Effects

The cumulative effects from alternative 2 would be the same as those described for the no-action alternative. There would be long-term minor adverse impacts on MD 355 and moderate long-term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic resulting from greater visitation. However, the access and circulation improvements throughout the battlefield under alternative 2 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Conclusion

Alternative 2 would result in long-term minor adverse impacts on MD 355 and moderate long-term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic caused by greater numbers of visitors. However, the access and circulation improvements throughout the battlefield under alternative 2 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

EFFECTS FROM ALTERNATIVE 3

Analysis

Visitors to Monocacy National Battlefield traveling on foot or by vehicle to battlefield features would benefit from alternative 3, a moderate long-term beneficial effect on access and circulation.

With the opening of the new visitor center, the flow of visitor travel to battlefield resources has been simplified. Left turn movements from MD 355 into the visitor center will be shifted north to an area where sight distance is better and the highway is wider. The location of the visitor center also will allow visitors to reach the 14th New Jersey Monument and Araby Church Road by turning right off MD 355. This will make access to the battlefield features safer and help to eliminate confusion.

Widening the gravel-surfaced entry lane from Baker Valley Road to the Worthington House for two-way access and adding a small parking area would enable visitors to park vehicles closer to the Worthington House, a beneficial effect.

Visitors would benefit from the up-grading of a small parking area near the intersection of the Thomas Farm land with the Baker Valley road to improve access to the Thomas farmstead. Displaying interpretive exhibits in the stone tenant house at the Thomas Farm also would benefit visitors.

Moving the entrance to the 14th New Jersey Monument to the east side of MD 355 and adding a new parking area would benefit access and circulation. A trail under the MD 355 railroad over-pass would lead to the monument. The old parking area would be removed and the land rehabilitated. The national battlefield staff would work with New Jersey and CSX to coordinate these changes.

Relocating national battlefield headquarters to the Thomas House and leaving the maintenance facility in the metal building on the Gambrill property would offset any changes in the number of turning movements by NPS vehicles on MD 355 and the Gambrill Mill access drive.

Alternative 3 would result in no appreciable change in visitation beyond that projected for the new visitor center. The greatest effect on visitation would result from the completion of the visitor center, but the enhanced interpretive opportunities from improved access to battlefield features under alternative 3 would increase each visitor's length of stay. This would not affect traffic volumes beyond those projected for the no-action alternative.

Cumulative Effects

The cumulative effects from alternative 3 would be the same as those described for the no-action alternative. There would be long-term minor adverse impacts on MD 355 and moderate long-term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic resulting from greater visitation. However, the access and circulation improvements throughout the battlefield under alternative 3 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Conclusion

Alternative 3 would result in long-term minor adverse impacts on MD 355 and moderate long-term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic caused by greater numbers of visitors. However, the access and circulation improvements throughout the battlefield under alternative 3 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the

national battlefield's resources or values would not be impaired.

EFFECTS FROM ALTERNATIVE 4 (PREFERRED ALTERNATIVE)

Analysis

Visitors to Monocacy National Battlefield traveling on foot or by vehicle to battlefield features would benefit from alternative 4, a moderate long-term beneficial effect on access and circulation.

With the opening of the new visitor center, the flow of visitor travel to battlefield resources has been simplified. Left turn movements from MD 355 into the visitor center will be shifted north to an area where sight distance is better and the highway is wider. The location of the visitor center also will allow visitors to reach the 14th New Jersey Monument and Araby Church Road by turning right off MD 355. This will make access to the battlefield features safer and help to eliminate confusion.

A number of access and circulation improvements would be made to areas of the battlefield under alternative 4 that would give visitors access to areas that have been inaccessible. Access would be improved to the Best and Thomas farms, to the Wallace's headquarters site, and to existing features.

Adding a pedestrian deck across I-270 would restore a vital connection between the Worthington and Thomas farms that was lost when the interstate highway was built, making it possible to walk between the farms, about where Union and Confederate troops engaged

in some of the heaviest fighting. This would benefit access and circulation.

Shifting the entrance to the 14th New Jersey Monument south to improve sight distances would improve safety. The national battlefield staff would work with the state of New Jersey to develop a plan to improve parking near the monument.

Relocating national battlefield headquarters to the Thomas House and leaving the maintenance facility in the metal building on the Gambrill property would offset any changes in the number of turning movements by NPS vehicles on MD 355 and the Gambrill Mill access drive.

Adding trails to the Wallace's headquarters site, and the Union entrenchment area, would result in a moderate long-term beneficial effect on access and circulation.

Alternative 4 would result in no appreciable change in visitation beyond that projected for the new visitor center. The greatest effect on visitation would result from the completion of the visitor center, but the enhanced interpretive opportunities from improved access to battlefield features under alternative 4 would increase each visitor's length of stay. This would not affect traffic volumes beyond those projected for the no-action alternative.

Cumulative Effects

The cumulative effects from alternative 4 would be the same as those described for the no-action alternative. There would be long-term minor adverse impacts on MD 355 and moderate long-

term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic resulting from greater visitation. However, the access and circulation improvements throughout the battlefield under alternative 4 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Conclusion

Alternative 4 would result in long-term minor adverse impacts on MD 355 and moderate long-term adverse impacts on the Araby Church and Baker Valley road networks from increased traffic caused by greater numbers of visitors. However,

the access and circulation improvements throughout the battlefield under alternative 4 also would result in moderate long-term beneficial effects on pedestrian and vehicular access and circulation to features throughout the battlefield.

Because there would be no major adverse effects on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Monocacy National Battlefield, (2) key to its natural or cultural integrity or opportunities for its enjoyment, or (3) identified as a goal in its general management plan or other relevant NPS planning documents, the national battlefield's resources or values would not be impaired.

EFFECTS ON NPS OPERATIONS AND FACILITIES

METHODS FOR ASSESSING EFFECTS ON NPS OPERATIONS AND FACILITIES

Analyses of the potential effects on NPS operations and facilities were evaluated for the following categories:

- infrastructure, visitor facilities, and services
- the operations of other federal agencies such as the Forest Service, U.S. Department of Agriculture, and the Bureau of Land Management, U.S. Department of the Interior
- the operations of non-NPS entities such as the Western Maryland Interpretive Association, agricultural lessees, partners, and volunteers

Effects were analyzed on the basis of how national battlefield operations and facilities might vary under the different alternatives. The analysis is qualitative rather than quantitative because the alternatives are conceptual. Professional judgment was used to reach reasonable conclusions about the intensity, duration, and type of each potential effect.

Duration

Short-term effects would last less than one year, because construction generally is finished within a year, and any effect would last only until all construction-related actions were completed. Long-term effects would extend beyond one year, and such effects on operations could be permanent.

Intensity

The intensities of effects are defined as follows:

Negligible — National battlefield operations would not be affected, or the effect would be at or below the lower levels of detection, and the action would not have an appreciable effect on national battlefield operations.

Minor — The effect would be detectable but would not be of a magnitude that would have an appreciable effect on national battlefield operations.

Moderate — The effects would be readily apparent, and the action would result in a substantial change in national battlefield operations that would be noticeable to the staff and the public.

Major — The effects would be readily apparent, and the action would result in a substantial change in national battlefield operations that would be noticeable to the staff and the public, so that operations would be markedly different from existing operations.

Type of Effect

Beneficial effects would improve NPS operations or facilities. Adverse effects would negatively affect NPS operations or facilities and could hinder the ability of the National Park Service to provide adequate services and facilities to visitors and staff. Some effects could be beneficial for some operations or

facilities and adverse or neutral for others.

EFFECTS FROM ALTERNATIVE 1 (NO ACTION)

Analysis

Visitors' interest in seeing the battlefield's historic structures could be piqued by information available in the new visitor center. However, in alternative 1 visitors could not enter any historic structure; therefore, it is unlikely that any visitor would stay long at each location.

The on-going preservation and stabilization of historic structures continues to reduce the battlefield's deferred maintenance backlog, thereby allowing maintenance personnel to transition into a preventive maintenance program that would avoid future costly rehabilitation efforts.

The no action alternative would result in a long-term minor beneficial effect on national battlefield operations.

Cumulative Effects

Past facility development has resulted in a moderate long-term beneficial effect on the national battlefield's operations. The addition of the new visitor center built on the north side of the national battlefield will cause a moderate long-term beneficial effect on national battlefield operations.

Conclusion

The no-action alternative would result in a long-term minor beneficial effect on national battlefield operations.

EFFECTS FROM ALTERNATIVE 2

Analysis

Adding exhibits and other new visitor facilities in the stone tenant house on the Thomas Farm, would improve visitor services, resulting in a more comprehensive visitor experience and a greater staff presence in the heart of the battlefield.

The national battlefield's administrative staff would be farther removed from some resources under alternative 2, which could result in higher fuel consumption and longer travel times.

Leasing maintenance space outside the national battlefield would result in a larger, more efficient facility and in the removal of a nonhistoric structure from the battlefield landscape.

The on-going stabilization and preservation efforts on historic structures continues to reduce the battlefield's deferred maintenance backlog, thereby allowing maintenance personnel to transition into a preventive maintenance program that would avoid future costly rehabilitation efforts.

Utilizing the historic leasing program for the Thomas farmhouse would reduce the battlefield's deferred maintenance backlog by considerably. This would also free up maintenance staff to concentrate on preventive maintenance efforts for the battlefield's remaining assets.

Alternative 2 would result in a long-term major beneficial effect on Monocacy National Battlefield.

Cumulative Effects

The efficiency of national battlefield operations would be improved by removing administrative and maintenance operations from the battlefield and opening the new visitor center. A major long-term beneficial effect on national battlefield operations would result from the new visitor center and from the actions of alternative 2. Together, these present and proposed actions would result in a major long-term beneficial effect on national battlefield operations.

Conclusion

Alternative 2 would result in a long-term major beneficial effect on the national battlefield's operations, compared with the effects of the no-action alternative.

EFFECTS FROM ALTERNATIVE 3

Analysis

Adding exhibits and other new visitor facilities in the stone tenant house on the Thomas Farm, the Worthington, and Best Houses, would improve visitor services. These actions would result in a more comprehensive visitor experience and a greater staff presence in the heart of the battlefield.

With the interior of the Thomas House being adaptively reused for administrative offices, all administrative and headquarters staff could occupy the same building.

The on-going stabilization and preservation efforts of historic structures continues to reduce the battlefield's deferred maintenance backlog, thereby allowing maintenance personnel to

transition into a preventive maintenance program that would avoid future costly rehabilitation efforts.

Overall, alternative 3 would result in long-term major beneficial effects on national battlefield operations.

Cumulative Effects

The new visitor center will result in a major long-term beneficial effect on national battlefield operations, as would the actions of alternative 3. Together, these present and proposed actions would result in a major long-term beneficial effect on national battlefield operations.

Conclusion

Alternative 3 would result in a long-term major beneficial effect on the national battlefield's operations, compared with the effects of the no-action alternative.

EFFECTS FROM ALTERNATIVE 4 (PREFERRED ALTERNATIVE)

Analysis

Adding a new visitor facility at the stone tenant house on the Thomas Farm, along with exhibits at the Worthington House, would improve visitor services. These actions would result in a more comprehensive visitor experience and a greater staff presence in the heart of the battlefield.

The on-going stabilization and preservation efforts of historic structures continues to reduce the battlefield's deferred maintenance backlog, thereby allowing maintenance personnel to transition into a preventive maintenance

program that would avoid future costly rehabilitation efforts.

Overall, alternative 4 would result in long-term major beneficial effects on national battlefield operations.

Cumulative Effects

The new visitor center will result in a major long-term beneficial effect on national battlefield operations, as would the actions of alternative 4. Together,

these present and proposed actions would result in a major long-term beneficial effect on national battlefield operations.

Conclusion

Alternative 4 would result in a long-term major beneficial effect on the national battlefield's operations, compared with the effects of the no-action alternative.

REQUIRED ANALYSES

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Other than some losses of construction materials and energy, there would be no irreversible or irretrievable commitments of resources under any of the alternatives.

RELATIONSHIPS OF SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Alternative 1 (No Action)

Continuing use and visitor activities, along with planned facility improvements under the no-action alternative, would continue to improve the long-term productivity of the socioeconomic environment over both the short term and the long term.

Alternative 2

Rehabilitating the Thomas house under the historic leasing program would make it possible to achieve ongoing maintenance through a non-NPS source of income.

Alternative 3

Rehabilitating the Thomas, Best, and Worthington houses for use as offices and exhibit space would alter them from their original purposes.

Alternative 4 (Preferred Alternative)

Rehabilitating the Thomas and Worthington houses for use as offices and exhibit space would alter them from their original purposes.

ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Alternative 1 (No Action)

Energy requirements would be unchanged under alternative 1 because no new structures would be built and the way in which visitors reach the national battlefield would not change. Gradually improving the energy efficiency of existing structures could mitigate energy requirements. Alternative 1 would result in the least use of energy of all the alternatives because fewer structures would be used by visitors and by national battlefield administration.

Alternative 2

Alternative 2 would consume more energy than alternative 1. The Thomas house, now unused, would be placed under the historic leasing program. The Thomas stone tenant house, also unused, would become exhibit space. Although national battlefield administration would be moved from Gambrill Mill into rented space outside the national battlefield, the mill would continue to be used.

Several actions of alternative 2 would result in more energy consumption than alternative 1. Creating a new entrance to the 14th New Jersey Monument would use energy, as would removing the maintenance facility and constructing a deck across I-270. A visitor transportation system, if fully utilized, could save energy compared to the use of private vehicles, depending on the type of system used and the energy source.

Alternative 3

More energy would be consumed in alternative 3 than in alternative 2. Energy would be needed for the use of the Best, Thomas, and Worthington Houses and the stone tenant house on the Thomas farm, all of which are now unused. Even with the administrative function removed, about the same amount of energy would be needed for the Gambrill Mill.

Creating a new entrance and parking area for the 14th New Jersey Monument, and widening Worthington Lane would consume additional energy.

Alternative 4 (Preferred Alternative)

Alternative 4 would result in the consumption of about the same amount of energy as alternative 3. As in alternative 3, more energy would be needed for the use of the Thomas and Worthington houses and the stone tenant house on the Thomas farm, all of which are now unused. Similarly, even with the administrative function removed, about the same amount of energy would be needed for the Gambrill Mill.

Creating a new entrance to the 14th New Jersey Monument, and widening Worthington Lane would consume additional energy, as would adding a pedestrian deck across I-270.

(blank)