

## **CHAPTER 3:**

### **THE AFFECTED ENVIRONMENT**

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## INTRODUCTION AND TOPICS ELIMINATED FROM ANALYSIS

### INTRODUCTION

In this chapter the existing environment of Monocacy National Battlefield is described, as is the surrounding region. The guidelines of the Council on Environmental Quality (CEQ) for implementing the National Environmental Policy Act require that the description of the affected environment focus on describing the resources and people that might be affected by implementing the alternatives. Impact topics (resources to be affected) were developed to focus the environmental analysis and to ensure that the impacts of each alternative on relevant resources would be appropriately evaluated.

The identification of impact topics was based on federal laws and other legal requirements, the CEQ guidelines, NPS management policies, NPS expertise and knowledge of limited or easily affected resources, and issues and concerns expressed by other agencies or the public during the project scoping. A brief rationale for eliminating or including each impact topic is given in this chapter.

### TOPICS ELIMINATED FROM FURTHER ANALYSIS

Some impact topics that usually are considered during the planning process are not relevant to the development of this plan because (a) they would not be affected by implementing the alternatives or the effects on a particular resource would be negligible or minor, or (b) the resource is not found in Monocacy National Battlefield. The

topics that have been eliminated from further analysis are discussed in this section.

#### Archeological Resources

Archeological resources — the physical evidence of past human activity — represent both prehistoric and historic occupations at Monocacy National Battlefield. A complete assessment and documentation of the battlefield's archeological resources has not yet been undertaken; however, varying degrees of archeological resource information exist for most of the component properties, including the Best, Thomas, and Worthington farms and the Gambrill tract.

Archeological resources are those associated with both temporary and permanent settlements (both historic and prehistoric) and with long-term and short-term military uses of the land. As previously noted, there were intensive prehistoric occupations of the Monocacy River Valley, particularly in association with the river itself. Prehistoric occupations of Monocacy National Battlefield have been documented archeologically at the Best, Thomas, and Worthington farms, and there probably is evidence of such occupations at other component properties.

At the Best and Thomas farms, 18th century historic occupations have been documented in the form of previously unrecorded structures, features, and activity areas. Archeological research at these properties has yielded important information about 18th and early 19th

century occupations of these sites. At the Thomas Farm, for example, archeologists uncovered the site of a mid 18th century tavern associated with the Middle Ford ferry, and at the Best Farm they have found an archeological footprint of the slave village associated with the Vincendière family's L'Hermitage plantation. Such discoveries have yielded crucial information about events and individuals that often appear only incidentally in the historic record.

A number of Civil War-era archeological resources also have been discovered at the Monocacy Battlefield. There are outbuildings and other features associated with 19th century component properties such as the Lewis, Worthington, and Baker farms and the Gambrill tract. For example, the farmhouses at the Worthington and Lewis farms survive, but most of the associated historic outbuildings and dependencies have disappeared; they exist only in the archeological record. At the Gambrill tract, little aboveground evidence remains of the associated milling complex. It is likely that archeological investigations at the Gambrill Mill and in the Wallace's headquarters site will reveal more about the composition and chronology of these sites.

It is believed that the main house at the Baker Farm (ca. 1914) was built on the foundations of an earlier structure. A number of more modern farm outbuildings are extant; however, archeological investigations may reveal evidence of earlier building composition and arrangement. In addition, archeological research at the Best Farm has uncovered

a number of Civil War era features, including a cistern and an associated midden, or refuse deposit.

Long-term and short-term military use also has left its archeological imprint. As was mentioned earlier, during the Maryland and Gettysburg campaigns, troops from the Union and Confederate armies camped in the junction area. A long-term encampment, known historically as Camp Hooker, exists within the battlefield's congressional boundary and has been identified archeologically. Archeological evidence of short-term campsites also has been documented on the Best Farm, and sub-surface remains of the battle itself (dropped and fired small arms projectiles, artillery shell fragments, weapons, personal items) also have been documented on the Best Farm. However, because the military use in July 1864 extended to all the component properties, the potential exists for the presence of military artifacts almost anywhere within the national battlefield's boundaries.

There was post-Civil War occupation of all the component properties of Monocacy National Battlefield; this may be represented in the archeological record. This is most probable on the Gambrill tract, where the Edgewood estate was established in the late 19th century. Dependencies associated with the Gambrill House (ca. 1872) have been documented in the historical record, and they probably exist archeologically. In addition, occupations in the Wallace's Headquarters area, along the B&O Railroad, continued into the early

20th century; they also probably are represented in the archeological record.

Monocacy National Battlefield has not been systematically surveyed or inventoried archeologically except for surveys of limited areas conducted in compliance with section 106 of the National Historic Preservation Act of 1966, as amended. However, the National Park Service is required by law and policy to evaluate archeologically any site proposed for development. Because this plan would not entail actions that would affect specific known archeological resources, this topic has been dismissed from further consideration.

Should any such resources be present, ground disturbance would be stopped until evaluation against the criteria for listing on the National Register of Historic Places could be undertaken. Such evaluation would be undertaken in consultation with the Maryland state historic preservation officer (SHPO). Actions that would require further consultation with the state historic preservation officer are listed in appendix E. If a determination of eligibility was made, the proposed development would be moved, or archeological mitigation would be undertaken.

### **Ethnographic Resources**

No actions are proposed in the alternatives of this plan that would affect specific known ethnographic resources; therefore, the topic has been dismissed. Should any ethnographic resources be identified after the plan has been published, they would be treated according to the requirements of the laws and

policies identified in appendixes B and C.

### **Museum Objects**

Weapons, accoutrements, and spent ammunition used and left behind by soldiers before and during the Battle of Monocacy are some of the objects in Monocacy National Battlefield's museum collection. A number of these objects have been donated or otherwise acquired. Many more were recovered during recent research- and compliance-driven archeological excavations at the battlefield.

Curated items at Monocacy National Battlefield are stored in museum quality curatorial cabinets that meet NPS storage standards. Although a few objects rate as poor, most are in good to very good condition. Because storage space in the national battlefield is insufficient, most of the archeologically recovered objects are stored at the Museum Resource Center, a state-of-the-art facility in Landover, Maryland.

The national battlefield's collection can be expected to grow with continuing archeological investigations and treatment of selected structures. Moreover, archival collections can be expected to expand as historical research continues.

NPS policy requires that no museum objects be allowed within the 500-year floodplain without an evacuation plan. Under all the alternatives, all museum objects would be stored or exhibited outside the floodplain. In addition, museum objects kept in the national battlefield would be stored or exhibited in compliance with all applicable NPS regulations and policies. Therefore,

museum objects would not be affected under any of the alternatives, and this topic has been dismissed.

### **Air Quality**

The guidelines of the Council on Environmental Quality for preparing environmental impact statements require the lead agency to analyze the effects on air quality from the proposed action and the alternatives. Under each of the alternatives of this document, similar levels of air pollutant emissions would be generated by motor vehicles and motorized equipment. Some dust and fumes would be generated during the maintenance, improvement, construction, or removal of roads, trails, and other facilities. Whenever possible, the National Park Service would follow established policies requiring the use of energy-efficient and environmentally friendly products and processes. Although public visitation and motor vehicle use are expected to increase during the next 20 years, the levels of vehicle exhaust are not expected to increase dramatically or to contribute substantially to regional air pollutant loads.

None of the identified air pollutant sources would generate quantities that would require a permit under the regulations of the U.S. Environmental Protection Agency and the Maryland Department of the Environment. The effects these emissions would cause on the local environment and regional air quality are considered negligible for all alternatives. Therefore, air quality is excluded from further analysis.

### **Water Resources and Water Quality**

Monocacy National Battlefield straddles the Monocacy River, a tributary of the Potomac River and part of the Chesapeake Bay watershed and a designated Maryland state scenic river. The river begins a short distance north of the Maryland-Pennsylvania border and flows through central Maryland to the Potomac. It flows directly through and along the boundary of Monocacy National Battlefield for approximately 2.5 miles. The river's course takes it through a primarily agricultural landscape. Years of soil erosion, livestock and fertilizer use, and increasing urbanization have resulted in heavy sediment deposits. The section of the river that flows through the national battlefield is shallow and silted, with several small reaches of riffles.

Several streams, both perennial and intermittent, pass through the boundary of Monocacy National Battlefield and empty into the Monocacy River. All these streams exhibit some degree of channel structure degradation, primarily from increased water volume and speed from upstream runoff. Construction and development in the surrounding area have increased the amount of impervious surface and contributed to this harmful change. Approximately 0.8 mile of Bush Creek, the largest of these streams, passes through the north central part of the battlefield. Bush Creek is characterized by stretches of pools and riffles, with a primarily stone and sand bottom. As it nears its confluence with the river, the stream channel becomes incised and much of the stream bank is undercut.

Harding's Run is the only other named tributary in the national battlefield. It passes through the south central portion of the national battlefield for roughly 1.75 miles. The stream is primarily intermittent; it usually can sustain flowing water for about 8 months of the year. Its upper reaches are heavily wooded, contain a stone substrate, and have some good quality riparian wildflower areas. As the creek passes under Baker Valley Road and through the national battlefield and its volume increases, it becomes more incised. Near the mouth of the stream, the banks are 8 feet high and extremely undercut. Other intermittent streams that run through the national battlefield usually contain flowing water about 6–8 months of the year. They typically have sand and stone bottoms and display similarly degraded channel structures.

There are several springs and seeps in the battlefield. These do not produce large volumes of water, but their conservation is a priority because of their ability to supply the streams and river with fresh, cold water. They also can serve as critical habitat for aquatic invertebrates.

The national battlefield has developed a water quality monitoring program and is collecting water chemistry data at 13 sites around the national battlefield. The battlefield's streams are surveyed for dissolved oxygen, pH, conductivity, temperature, nitrates, and phosphates to determine what, if any, impact on surface water resources would be caused by the national battlefield's activities. In addition, three sites have been established where data are col-

lected according to the Riparian Channel Environmental Inventory protocol to document the physical and biological condition of the streams. The national battlefield's data will be used in conjunction with additional sampling by regional NPS water resources staff.

The NPS Water Resources Division and Inventory and Monitoring Program collected previously sampled water quality data in 2000 to establish baseline water chemistry levels for Monocacy National Battlefield. This report consisted of data from by the United States Geological Survey (USGS), the United States Environmental Protection Agency (EPA), and the Maryland Department of Natural Resources, mostly from sampling stations along the Monocacy River.

The Lower Monocacy River watershed is included in Maryland's 303(d) listed waters as failing to meet the designated uses defined within Maryland water quality standards. The reasons for this nonattainment are listed as nutrients and suspended sediments. Enduring threats to the water quality of the Monocacy River watershed are sedimentation, nutrient enrichment from nonpoint sources (such as agriculture), point sources (sewage plants), and contamination.

The national battlefield has agreements with agricultural lessees to regulate the use of pesticides and herbicides. Best management practices have been established to limit soil erosion and runoff into streams. The alternatives of this plan would be most likely to affect water quality through construction activities. Following the mitigating measures described earlier (p. 85) and

the policies described in the “Consultation and Coordination” chapter would reduce these potential impacts so that the impacts would be negligible. Therefore, water quality has been excluded from further analysis.

### **Water Quantity**

Water used for national battlefield facilities is obtained from wells near the facilities. The quality of water for personal consumption meets all standards, and water is abundant. None of the alternatives being considered would be expected to cause substantial changes in surface water or ground-water flows in the national battlefield or to affect the national battlefield’s water supply. The effects from the alternatives of this plan on water quantity would be negligible; therefore, this topic has been dismissed from further consideration.

### **Wild and Scenic Rivers**

The Monocacy River in Monocacy National Battlefield is listed on the Nationwide Rivers Inventory prepared by the National Park Service. This inventory is a register of rivers that may be eligible for inclusion in the national wild and scenic river system. The inclusion of a river in this inventory was based on the degree to which it is free-flowing, the degree to which the river and its corridor are undeveloped, and the outstanding natural and cultural characteristics of the river and its immediate environment. Section 5 (d) of the National Wild and Scenic Rivers Act (PL 90-542) requires that “In all planning for the use and development of water and related land resources, consideration shall be given by all

federal agencies involved to potential national wild, scenic, and recreational river areas.”

In partial fulfillment of the section 5 (d) requirements, the National Park Service has complied and maintains the National Rivers Inventory. The intent of the inventory is to provide information that will help managers to make balanced decisions about the use of the nation’s river resources. A presidential directive and subsequent instructions issued by the Council on Environmental Quality and codified in agency manuals requires that each federal agency, as part of its normal planning and environmental review process, take care to avoid or mitigate adverse effects on rivers identified in the inventory. No actions of the alternatives of this plan would affect the outstandingly remarkable values for which the rivers were included on the National Rivers Inventory, nor would any of the actions effectively foreclose the rivers from future designation as wild or scenic.

The Monocacy River has been designated a Maryland state scenic river protected for recreation and wildlife. The objectives of the plan for the scenic river, *Monocacy Scenic River Study and Management Plan* (Monocacy Scenic River Local Advisory Board, 1990), are listed under the “Relationships of Other Planning Efforts to This *General Management Plan*” section.

The effects on the Monocacy River that would result from NPS actions would be relatively minor and would not compromise the values for which the scenic river was designated. Therefore,



the topic of wild and scenic rivers has been dismissed.

### **Wetlands**

Wetlands are the transition areas between water and land that permanently or occasionally contain water. Wetlands can play an important role in the environment by filtering runoff, collecting sediment, and offering wet habitats for a variety of flora and fauna. These areas include marshes, bogs, swamps, and palustrine woodlands. The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) map has identified about 80 acres of primarily palustrine forested and riverine forested wetlands in the national battlefield. Most habitat included in this delineation consists of the Monocacy River itself and the forested riparian areas along the river, Bush Creek, and Harding's Run.

There are riparian areas along both sides of the Monocacy River, Bush Creek, and other streams in the national battlefield. These areas could be affected by the actions of the alternatives if the actions included allowing access to the river and streams through the riparian areas, building trails through them, or removing vegetation from them. All the listed actions would be mitigated by carrying out the mitigating measures described earlier and by following the wetlands executive order, NPS management policies, and Director's Order (DO) 77-1 (described in the "Consultation and Coordination" chapter). The National Park Service would follow these guidelines to ensure that there would be no net loss of wetlands and would strive to reach the longer-term goal of net gain

of wetlands by restoring destroyed or degraded wetlands.

All the forested riparian buffers in the battlefield are 35 feet wide or wider; thus, they meet the requirement of the NPS Northeast and National Capital Region buffer plan and comply with the requirements of the Chesapeake Bay Program (A water resources management plan now underway will widen the riparian buffer to 50 feet). The effects caused by the actions of the alternatives, when mitigated by following the measures and guidance described above, would be negligible. Therefore, wetlands are dismissed as an impact topic.

### **Floodplain Values and Flooding**

Floodplains exist in Monocacy National Battlefield where there are perennial and intermittent streams. Floodplains in national park system units are protected and managed in accordance with EO 11988, *Floodplain Management*, NPS DO 77-2 (*Floodplain Management*), and NPS *Management Policies 2006* (4.6.4). This guidance requires that the National Park Service protect, preserve, and restore floodplain values, minimize risk to life or property by the design or modification of actions in floodplains, and examine the effects on floodplains.

It is NPS policy to avoid affecting floodplains and to minimize impacts when they are unavoidable. Under all the alternatives of this plan, new developments, including trails, would be sited in consultation with the NPS Water Resources Division and in concert with guidelines and policies to avoid impacts on floodplains. Therefore, the impacts on floodplains would be negligible.

The Gambrill Mill is in the 100-year floodplain of the Monocacy River and Bush Creek. However, historic structures whose locations are integral to their significance are exempt from compliance with NPS Procedural Manual 77-2, "Floodplain Management." The national battlefield staff would continue to carry out the actions described in appendix C, ("Servicewide Laws and Policies") under the headings "Floodplains," and "Wetlands." The staff also would follow the mitigating measures described beginning on page 85 to ensure that activities in the national battlefield would not compromise natural or beneficial floodplain values or the safety of employees and visitors.

### **Vegetation and Plant Communities**

The vegetation composition and patterns at Monocacy National Battlefield are indicative of the open natural and agricultural landscape in the Piedmont region of Maryland. About 40% of the national battlefield is forested; the rest is primarily agricultural. The patchwork of these upland and riparian forested areas interspersed with agricultural and open fields offers a number of vegetation and habitat types. Some areas are undergoing old-field succession; others are second or third growth forests with mature hardwoods.

Even though the national battlefield's elevation range is relatively insignificant, upland areas contain associated dry site species such as oak (*Quercus* spp.), hickory (*Carya* spp.), and American beech (*Fagus grandifolia*). The lowland riparian forests in the floodplain of the river and along the national battlefield's

streams are dominated by maple (*Acer* spp.), sycamore (*Platanus occidentalis*), hackberry (*Celtis occidentalis*), and ash (*Fraxinus* spp.). Recently disturbed areas are characterized by generalist tree species such as tulip poplar (*Liriodendron tulipifera*), black cherry (*Prunus serotina*), black locust (*Robinia pseudoacacia*), box elder (*Acer negundo*), and the invasive and exotic tree-of-heaven (*Ailanthus altissima*).

Several national battlefield vegetation studies have been or are being conducted. Their findings record more than 375 different plant species, of which more than 100 are exotic. Recent surveys have shown that exotic plants infest most of the nonagricultural land in Monocacy National Battlefield. Some high priority invasive weeds in those areas are multi-flora rose (*Rosa multiflora*), tree-of-heaven (*Ailanthus altissima*), Japanese honeysuckle (*Lonicera japonica*), garlic mustard (*Allaria petiolata*), and Japanese stiltgrass (*Microstegium vimineum*). High priority invasive weeds in the agricultural areas are Johnson grass (*Sorghum halepense*), Canada thistle (*Cirsium arvense*), and Bull thistle (*Cirsium vulgare*).

Implementing the actions of the alternatives of this plan would result in negligible changes in vegetation or plant communities in the national battlefield. Some actions might require clearing, but such clearing would be small scale and local. Because there would be little change, if any, in vegetation and plant communities in the battlefield, this topic will not be analyzed further.

## Wildlife

The diverse mix of woods, fields, streams, and the river in the national battlefield provide abundant habitat for many species of wildlife. Common mammal species seen at the national battlefield are white-tailed deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), red fox (*Vulpes vulpes*), and groundhog (*Marmota monax*). Bird species also abound in the mix of open fields and woods: red-tailed hawk (*Buteo jamaicensis*), northern cardinal (*Cardinalis cardinalis*), bluebird (*Sialis sialis*), wild turkey (*Meleagris gallopavo*), great blue heron (*Ardea herodias*), and red-winged blackbird (*Agelaius phoeniceus*). Bald eagles (*Haliaeetus leucocephalus*) are known to nest in the area and can be seen flying over the national battlefield.

Past wildlife inventories have concerned small mammals, aquatic macroinvertebrates, and birds. Current scientific research is concentrating on reptiles and amphibians, white-tailed deer, fish, and bats. These studies, along with personal observations and records, have documented more than 175 species of fauna in the national battlefield.

The principal wildlife issue at the national battlefield is the deer population. Since the mid-1990s several research studies and projects have focused on the national battlefield's most abundant wildlife resource, white-tailed deer. Frederick Community College has performed fecal pellet cluster counts and deer drives to estimate the deer densities in the Brooks Hill / Worthington Farm areas since spring 1997.

The Southeastern Cooperative Wildlife Disease Study at the University of Georgia's College of Veterinary Medicine performed a comprehensive evaluation of herd health for the national battlefield's deer population in 2002. Necropsies were done on sampled deer to obtain health parameters — overall condition, kidney fat indices, and parasite counts — to establish a relative carrying capacity for the population. The conclusion of this study was that the deer herd at the national battlefield is approximately at carrying capacity.

The Smithsonian National Zoological Park's Conservation Research Center is conducting a study on the effect of deer foraging on agricultural crops and forests. Using fenced exclosures, the study is trying to measure corn yield and tree regeneration inside and outside the exclosures when compared against established control plots.

Since 2001, the national battlefield has been cooperating with Antietam National Battlefield's resource management staff to measure deer population density through a method called distance sampling. The staff of Monocacy National Battlefield conducts night counts by spotlight twice a year and enters the number of deer, number of groups, and sex ratio into the "Distance" software program to calculate the population density. To allow for successful tree regeneration in forested areas, scientific research by Tilghman (1989) suggests an upper range for deer density at 40 deer per square mile. The results from the Distance software show an average spring deer density of approximately 100 deer per square mile

and an average fall density of about 145 deer per square mile in the national battlefield. This density survey represents a work in progress, and semiannual spotlight counts are scheduled for every spring and autumn.

Other scientific research covering such topics as vegetation, birds, and rare, threatened, and endangered species has included white-tailed deer population monitoring as a management recommendation based on the impacts that deer can cause on those resources.

Increased disturbance and the loss of some wildlife habitat could result from the construction activities and potential increases in visitor numbers that could result from the alternatives of this plan. However, the proposed construction in all the action alternatives would take place in areas that already have been disturbed by agriculture or the presence of MD 355 or I-270. Wildlife inhabiting the battlefield already are adapted to high levels of disturbance. None of the alternatives would cause measurable changes in the abundance or distribution of any wildlife species. Therefore, wildlife will not be discussed as an impact topic.

### **Threatened or Endangered Species**

The U.S. Fish and Wildlife Service has recently removed the bald eagle (*Haliaeetus leucocephalus*) from the federal list of threatened species. However, the battlefield staff reports that it has been determined that eagles nest on land adjacent to Monocacy National Battlefield. Their habitat would not be affected by the actions of the

alternatives except perhaps indirectly by the restoration of riparian areas nearby.

The letter from The U.S. Fish and Wildlife Service is reproduced in appendix F. The Maryland Department of Natural Resources has “no records for Federal or State rare, threatened, or endangered plants or animals” in the national battlefield. That letter also appears in appendix F.

Before an approved plan is implemented, endangered, threatened, and special status species will be addressed at the project level through consultations with the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources to ensure the protection of the bald eagle and any species that might be found in the area. On the basis of these consultations, mitigating measures will be incorporated into project proposals if necessary to address any concerns about these species. Thus, no federally listed or state-listed threatened, endangered species would be affected by alternatives of this plan; therefore, this topic will not be addressed further.

### **Geologic Resources**

Monocacy National Battlefield lies in the Lowland section of the Piedmont Plateau Province in the Frederick Valley. Two primary rock types underlie the area — the Frederick Limestone formation is present in the lower elevations and bottomland, and sandstone and siltstone of the Antietam Formation are present in the upper elevations.

According to *NPS Management Policies 2006*, the agency is required to analyze

the effects on geologic resources that would be caused by the proposed action and the alternatives. The effects on soils, intermittent drainage systems, and hydrogeology are assessed separately in the “Environmental Consequences” chapter of this document.

NPS national policy prohibits the surface mining of soil, gravel, cinder, or rock materials for any operations purposes, including the construction of roads or facilities. Under any of the alternatives in this document, most modifications to access roads and facilities in Monocacy National Battlefield would be limited to existing disturbed areas, and they would not be likely to require blasting or other modifications of bedrock geology.

There are no known paleontological resources in Monocacy National Battlefield. The potential impacts on surface geologic outcrops from road or facility construction, visitor activities, or NPS operations would be negligible. Thus, the effect on the geologic resources of the national battlefield from any of the alternatives would be negligible; therefore, geologic resources are excluded from further environmental analysis.

## **Soils**

Most soils in the lowland areas of the national battlefield are of the Cadorus and Lindsides series. Soils in the upland areas are of the Cardiff and Whiteford series. On the basis of the 2001 soil survey, the Maryland Geological Survey has designated some areas of the national battlefield as highly erodible land, taking into account the soils present and

the slope. Farming practices in these areas are dictated by a conservation plan set out by the local Maryland Department of Agriculture Soil Conservation District. These plans outline conservation practices that must be followed to reduce erosion and nutrient runoff.

The soil survey has also documented 14 soils in the national battlefield that the U.S. Department of Agriculture has classified as prime farmland. Prime farmland includes soils that contain the best combination of characteristics to produce high crop yields but still maintain low erosion potential. The conservation of these farmlands prevents the use of poorer soils that may be more erodible or less productive.

Under the alternatives of this plan, the construction of roads or improvements and development could cause short-term disturbance of soils, but the disturbance would be confined to specific sites of limited area, or along narrow corridors associated with roads. Road improvements would reduce the erosion potential and dust associated with bare soil as a road base. The erosion potential generally is low because the topography is relatively level and there is a large amount of vegetative cover. Applying appropriate best management practices (silt fencing, prompt revegetation) and slope consideration would control and mitigate construction impacts, so that the resultant impacts would be negligible. The total developed area of the national battlefield would be small, so that permeability and runoff would not be noticeably affected. Therefore, the long-term effects on soils would be

negligible, and this topic has been dismissed from further consideration.

### **Prime or Unique Farmland**

The 1981 Farmland Protection Policy Act (PL 97-98) was passed to minimize the extent to which federal programs would contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses and to ensure that federal programs would be administered in a manner that, to the extent practicable, would be compatible with state, unit of local government, and private programs and policies to protect farmland.

*Prime* farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion.

*Unique* farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, fruits, olives, cranberries, and vegetables

*Farmland* other than prime and unique that is of statewide or local importance for the production of food, feed fiber, forage, or oilseed crops, as determined by the state or local government, is also

considered farmland for purposes of the act.

The National Park Service consulted the soils maps for Frederick County issued by the Natural Resource Conservation Service (NRCS), U.S. Department of Agriculture. This is the agency responsible for implementing the policy. The maps identified several areas of prime farmland in the battlefield. The largest area is the southern third of the Best Farm. Prime farmland also can be found in most of the area at the north end of the national battlefield east of MD 355, a small part of the Baker Farm along I-270, a small part of the Thomas Farm along I-270, several areas at the Worthington Farm, an area of the Thomas Farm near the battlefield's eastern boundary, and some land along Bush Creek in the Gambrill Mill tract.

The areas that would be affected by the alternatives of this plan are portions of the Best Farm near MD 355, the area at the northern end of the national battlefield east of MD 355, a small part of the Baker Farm along I-270, and some land along Bush Creek in the Gambrill Mill tract. These areas could be affected by paving existing roads, removing nonhistoric structures, rehabilitating historic structures, and creating foot trails and small parking areas. The National Park Service consulted with the NRCS Frederick Field Service Center (Mark Siebert, February 23, 2004). The lands that would be affected are not in agricultural use at present. Therefore, these actions would not constitute conversion of farmland to another use, and no additional compliance with the Farmland Protection Policy Act

would be required. Therefore, this topic has been dismissed from further consideration.

### **Soundscape**

In accordance with NPS *Management Policies 2006* and DO 47, *Sound Preservation and Noise Management*, an important part of the NPS mission is to preserve, to the greatest extent possible, natural soundscapes associated with units of the national park system. Natural soundscapes exist in the absence of human-caused sound.

Visitors who come to Monocacy National Battlefield expect to find rural quiet similar to that of other national battlefields. Unfortunately, I-270 and MD 355 cross the national battlefield, creating constant background noise inconsistent with this expected quiet. These external sounds will not be decreased by any proposed NPS action. Any dissonant sounds associated with construction in any of the alternatives of this plan would last only as long as the construction. Because the opportunity for visitors to experience a natural sound environment is beyond NPS control, soundscape management has been dismissed as an impact topic.

### **Lightscape**

In accordance with its *Management Policies 2006*, the National Park Service strives, to the greatest extent possible, to preserve natural ambient lightscares, which are natural resources and values that exist in the absence of human-caused light. Monocacy National Battlefield endeavors to limit the use of artificial outdoor lighting to that

necessary for basic safety requirements, to ensure that all outdoor lighting is shielded to the maximum extent possible, and to keep light on the intended subject and out of the night sky. Therefore, lightscape management was dismissed as an impact topic.

### **Topics Not Applicable to Monocacy National Battlefield**

A number of issues were not mentioned in scoping, or the national battlefield has no resources in these categories. The following things will not be impact topics in this document

- caves
- coastal processes
- coral reefs
- fisheries and aquatic life
- geologic processes
- geothermal and hydrothermal resources
- marine/estuarine resources and habitat
- paleontological resources
- research natural areas
- water rights
- wilderness

### **Public Health and Safety**

None of the actions in any of the alternatives would result in any identifiable adverse impacts on human health or safety. The alternatives were designed with consideration for these factors. Some alternatives would change the transportation system in and outside of the national battlefield; those changes would greatly reduce the possibility of vehicle-pedestrian accidents.

### Environmental Justice

Federal agencies are required by EO 12898 to identify and address disproportionately high and adverse human health or environmental effects on minority and low income populations. None of the alternatives of this plan would result in a disproportionately high or adverse effect on any minority or low-income population or community. The reasons for this conclusion are as follows:

- The developments and actions of the alternatives would not result in any identifiable adverse effects on human health. Therefore, there would be no direct, indirect, or cumulative adverse effects on any minority or low-income population or community.
- The effects on the natural and physical environment caused by the actions of any alternative would not significantly and adversely affect any minority or low-income population or community.
- The alternatives would not result in any identified effects that would be specific to any minority or low-income community.

- The planning team actively solicited public comments when developing this plan and gave equal consideration to all input, regardless of the commenter's age, race, income status, or other socioeconomic or demographic factors.
- The effects on the socioeconomic environment from the alternatives of this plan would be minor or positive and would occur mostly within the local and regional geographic area. These effects would not occur all at one time; they would be spread over a number of years, which would reduce their magnitude. The effects on the socioeconomic environment would not substantially alter the physical and social structure of the nearby communities.

For these reasons, environmental justice will not be analyzed further in this document.



## IMPACT TOPICS — RESOURCES THAT COULD BE AFFECTED

### INTRODUCTION

Impact topics, simply defined, are the resources that could be affected by the actions of the alternatives of the plan. The impact topics discussed below were derived from the issues identified during scoping.

*Cultural Landscapes* — The cultural landscape of the national battlefield is integral to an understanding of the events of July 9, 1864. This plan outlines a course of action for the maintenance, development, and visitor use of the landscape.

*Historic Buildings and Structures* — Although not all historic buildings are included, the List of Classified Structures for Monocacy National Battlefield contains 51 listed historic buildings and structures. The alternatives of this plan propose both uses and treatments for these resources.

*Visitor Use and Experience* — The planning team identified “visitor use and experience” as an important issue that could be appreciably affected by the alternatives of this plan. The Organic Act and NPS *Management Policies 2006* direct the National Park Service to provide enjoyment opportunities for visitors that are uniquely suited and appropriate to the superlative resources found in the national battlefield. Within this impact topic are such things as: visitor orientation; circulation and access; visitor safety; interpretive opportunities; and visitors’ experiences of the national battlefield’s resources.

*The Socioeconomic Environment* — The National Environmental Policy Act requires an examination of the effects on social and economic conditions that are caused by federal actions. Monocacy National Battlefield affects the socioeconomy of nearby communities. Accordingly, residents and regional businesses may have concerns about changes in the management of the national battlefield that might affect their lives, the socioeconomic environment, and opportunities.

*Transportation, Access, and Circulation* — “Transportation, access, and circulation” was identified as a potential impact topic. The discussion of transportation in this document covers the effect on local and regional transportation networks surrounding Monocacy National Battlefield, as well as the battlefield’s existing transportation network of trails, roads, and parking areas. The principal effects would be changes in traffic flow and traffic safety conditions.

Providing safe access and circulation for visitors throughout the national battlefield relates specifically to the existing regional and local transportation networks crisscrossing the battlefield. Existing road networks give access to each farmstead in the battlefield, but improved access to primary landscape features within each farmstead is limited. In addition, some existing transportation corridors create a physical barrier to effective visitor circulation between important battlefield features. To address this deficiency, each alternative would entail a variety of

enhancements to the battlefield's existing internal circulation systems.

*National Battlefield Operations* — All the action alternatives of this plan would affect operations and facilities in the national battlefield. Within this topic are such things as staffing, maintenance, facilities, emergency response time, ability to enforce regulations and protect national battlefield values, the health and safety of employees and visitors, distance to work, managing collections and other resources, and administrative access.

## CULTURAL RESOURCES

### Background

The National Park Service is charged with the stewardship of many of the nation's most important natural and cultural resources and is responsible for preserving these resources for the enjoyment of present and future generations. The cultural resources of Monocacy National Battlefield are defined as the material evidence of past human activities. Among these are cultural landscapes, historic structures, museum objects and collections, and archeological sites.

By their nature, cultural resources are finite and *nonrenewable*; as a result, national battlefield management activities and policies must reflect awareness of their *irreplaceable* character. Therefore, NPS cultural resource management involves research, evaluation, documentation, and registration of national battlefield resources, along with the establishment of priorities to ensure that these

resources are appropriately preserved, protected, and interpreted to the public.

### Formal Designation of Resources

The National Register of Historic Places is the nation's official list of cultural properties worthy of preservation. Monocacy National Battlefield was listed in the national register in 1966, and its nomination was updated recently to include new properties (Paula S. Reed & Assoc., Inc. 2004).

In 1973 the secretary of the interior designated the national battlefield a national historic landmark, recognizing it as a site of exceptional importance possessing national significance. A cultural resource study for the national battlefield was undertaken in 1999 and has been updated several times to reflect new research and property acquisitions (Paula S. Reed & Assoc. 1999 and 2004).

The National Park Service completed a cultural landscape inventory of the entire national battlefield in 2000 (NPS 2000). And a number of recent architectural, archeological, and historic research projects have contributed greatly to understanding the national battlefield's cultural landscape (GWWO Architects Inc. 2003; Beasley 2004). Such studies also have helped to establish the historic context of the national battlefield's many cultural resources.

Except for the Gambrill House, which was individually listed on the national register in 1984, the other historic structures in the national battlefield are listed as contributing resources to the battlefield's national register nomination.

## **Period of Significance**

The period of significance for Monocacy National Battlefield extends from ca. 1750 to 1934 (1964 for monuments), spanning more than 180 years of settlement, agricultural improvement, and industrial expansion. Between the mid 18th and mid 19th centuries, the national battlefield's circulation and transportation corridors were established and the battlefield farmsteads were settled. The key transportation routes that converge within the boundaries of the battlefield facilitated the clash between Union and Confederate forces during the Battle of Monocacy, and the same circulation corridors helped facilitate post-Civil War recovery in the region.

Finally, beginning in the late 19th and early 20th century, the veterans' community, civic leaders, and government officials worked together to memorialize and commemorate the Battle of Monocacy. This culminated in the establishment of Monocacy National Military Park in 1934.

## **Cultural Landscapes**

A cultural landscape is a reflection of human adaptation and use of natural resources. It is often expressed in the ways that land is organized and divided, and also through such factors as settlement patterning, land use, circulation, and the built environment. The character of a cultural landscape is defined by physical attributes such as roads, structures, and vegetation patterns and by cultural attributes such as values and traditions.

Cultural landscapes are shaped by a variety of factors, including land use and land management, political and legal systems, technology, and economics. As such, they constitute a living record of an area's past, a visual chronicle of its history. Cultural landscapes are not static, however; modern and natural forces are continually reshaping them, posing a significant preservation challenge.

Before the Civil War, the area now occupied by the battlefield was a productive agricultural and milling community surrounding Monocacy Junction and other important transportation features in the vicinity. The rolling hills of the Monocacy River Valley were fertile lands on which a variety of crops were produced, ranging from corn, wheat, and other small grains to vegetables and dairy products.

A number of 18th and 19th century dwelling houses and agricultural out-buildings were clustered on the battlefield's five component farmsteads, along with mills, warehouses, and other structures associated with the Gambrill milling complex. Many of these structures are still extant on the battlefield landscape.

The properties that make up Monocacy National Battlefield reflect nearly three centuries of historic occupation and development around the Monocacy River crossroads. The battlefield's cultural landscape possesses a distinct character that no longer can be found readily in and around Frederick County. The buildings, structures, circulation systems, materials, organization, and open space all contribute to the historic

agricultural, milling, and early 20th century commemorative landscape qualities of the battle site. Indeed, Monocacy National Battlefield's many remaining historic structures combine with the railroad, highways, and farm fields to form a remarkably intact 18th and 19th century agrarian landscape.

Layered upon this landscape is an early 20th century Civil War commemorative component, along with other features associated with NPS management functions. In spite of the modern intrusions created by Interstate Highway 270 and contemporary suburban sprawl on adjacent lands, Monocacy National Battlefield preserves a unique "cross-roads community" whose diverse history spans more than 250 years. These landscape layers combine to result in a high level of integrity, character, and feeling.

### Historic Structures

Monocacy National Battlefield contains a number of historic structures, buildings, and other features that reflect the history of the site and contribute to the battlefield's national significance. Among the buildings are a variety of historic farmhouses, barns, and outbuildings, as well as nonhistoric buildings that are used for administrative or maintenance functions. Other structures are monuments, fences, earthworks, bridges, road traces, and other constructed elements.

Buildings are among the most prominent constructed features on the battlefield landscape. A number of these buildings were present during the 1864 battle, although most have been altered

since that time. Additional post-Civil War buildings augment these earlier buildings and contribute to the rural, agrarian character of the battlefield. Two of the battlefield's component properties, the Best and Thomas farms, contain 18th century structures, and all six properties have extant structures that date to the 19th century.

The Best Farm contains structures from the late 18th and early 19th centuries. Late 18th century buildings attributed to the Vincendière family's tenure on the property are the large main house, a secondary stone and log dwelling, and a stone barn. Two more historic structures, a wagon shed/corn crib and a log outbuilding, were built in the mid to late 19th century. The Best Farm also contains a 20th century well or pump house.

The Gambrill tract contains two historic buildings, a house and a stone mill now in use as a visitor center. The mill building dates to 1830, and although it has been greatly altered from its original appearance, it is the primary surviving element of a substantial milling complex. Additional structures associated with the mill include remnants of a dam on Bush Creek, raceway and tailrace. The ca. 1872 house is a large, Second Empire style brick mansion that retains a high level of integrity. It does not date to the Civil War period, but it is nonetheless an important historic feature.

The Thomas Farm contains several 18th and 19th century buildings. The Thomas House is a large brick dwelling constructed ca. 1780 with subsequent renovations and alterations during the 19th and 20th centuries. A smaller stone secondary house also exists that may

date to the 18th or 19th century. It has been significantly altered over time, but its use as a servant or tenant dwelling during the 19th century is well documented.

Other domestic outbuildings are a brick building of indeterminate age and frame shed that probably dates to the 19th century. The farm also contains several post-Civil War 19th century agricultural buildings, including a Pennsylvania style timber frame bank barn with an associated brick silo and a timber frame corn crib.

Two mid-20th century concrete block houses also stand on the Thomas Farm, one along Araby Church Road in front of the property and one on Baker Valley Road along the lane to the barn. At the intersection of Araby Church Road and MD 355 sits a two-story frame dwelling popularly known as the Toll House. Although it may date to the late 19th or early 20th century, this structure has been significantly altered and lacks historical integrity. In addition, it is likely that it was moved to its current location from another site.

The Lewis Farm contains four historic buildings — a ca. 1850 log house with a late 19th/early 20th century frame addition, a barn, a wagon shed, and a springhouse that probably date to the late 19th century. Although the Lewis Farm has been significantly affected by the construction of Interstate 270, its surviving buildings maintain the site's agrarian character.

The Worthington House (ca. 1851) is the only extant historic building that remains at the Worthington Farm. Exterior restoration of the house was

completed in 2004. The unrestored interior retains a number of important architectural features, most notably decorative trompe l'oeil decorative painting in the entrance hall and parlor.

The Baker Farm contains several late 19th and early 20th century structures, as well as several modern buildings. The main house dates to 1914, but it probably was built on the foundations of an earlier dwelling. Near the main house stand a smokehouse, a milk house, and a dairy barn, all built of rusticated concrete block and dating from the first half of the 20th century. A frame bank barn and a brick silo also are extant; they date to the mid or late 19th century. Several modern buildings, including concrete stave silos, an equipment shed, and a breeding barn also are present.

Associated with these farmsteads are the railroad, the railroad junction, roads, road traces, farm lanes, bridges, and other transportation features that crisscross the battlefield. Many of these features, particularly the railroad, the railroad junction, and the bridges and highways played a significant role in the events leading up to and including the Battle of Monocacy. Although the alignment and materials of some of these transportation features have been altered over time, their settings and association remain essentially intact.

Other structures are the surviving earthworks in the battlefield's Civil War defenses area. Such features — the only structural artifacts left from the Battle of Monocacy — are important interpretive resources. Other battlefield features are the five commemorative monuments erected between 1907 and 1964, which

reflect efforts by both individuals and organizations to commemorate the events of 1864 battle.

## **VISITOR USE AND INTERPRETATION**

### **Background**

Monocacy National Battlefield was first opened to visitors in 1991. A new full service visitor center for the national battlefield opened in 2007. An information desk, an electric map program, a cooperating association sales outlet, two floors of exhibits, restrooms, meeting space and offices can accommodate several busloads of visitors. Visitation has risen from approximately 8,000 the first year to more than 21,000 visitors in 2007.

A brochure available at the visitor center directs visitors to a chronological, self-guiding auto tour of the battlefield. It first leads them to the Best Farm, where the initial Confederate assault along the Georgetown Pike was halted when the covered bridge over the Monocacy River was burned.

At the next stop, Monocacy Junction, visitors learn about the physical relationship between the railroad, the river, and the Georgetown Pike and see how those physical features affected the military actions throughout the day of the battle. Then they drive to the Worthington Farm, where the Confederate “flanking movement” is interpreted. At the final stop, the Thomas Farm, visitors could learn how the Confederates engaged in some of what many soldiers said was the heaviest infantry fighting they encountered in the entire war. Finally, the Union line was broken and

the Federal forces retreated past Gambrill’s Mill.

Wayside exhibits complement the visitor experience at each stop on the auto tour and at nearby locations. Additional opportunities exist in the form of walking trails at the Thomas Farm, the Gambrill Mill, and the Worthington Farm.

Special interpretive events are offered, usually in summer, to attract more visitors to the national battlefield and to reach out to new audiences. These events often focus on specific themes or activities and sometimes complement a Civil War event that relates to Monocacy as well as a nearby site (for example, Lee’s lost order and the Battle of Antietam).

### **Visitor Facilities and Safety**

To ensure that national battlefield resources are protected and not endangered, public activities are evaluated for appropriateness before they are permitted. All activities and experiences are planned with the safety of visitors and employees in mind. This includes training, proper care and maintenance of equipment, and attention to safety codes.

## **THE SOCIOECONOMIC ENVIRONMENT**

### **Study Area**

The study area for this plan has been defined as Frederick County, Maryland. Monocacy National Battlefield, which is in the southern third of the county, is served by several major north-south and east-west roadways: U. S. Interstates 70 and 270; U.S. Highways 15, 40, and 340;

and Maryland Highways, 85, 144, 180, and 355. The CSX Railroad runs through Monocacy National Battlefield, with a spur line into Frederick. Scheduled commuter rail is available from Washington, D.C. No scheduled airlines use Frederick Municipal Airport.

Frederick, the only incorporated community in the county with more than 10,000 people (52,767), lies 44 miles north of Washington, D.C. and 51 miles west of Baltimore.

The national battlefield is at the southern edge of a heavily developed commercial area south of the city of Frederick. On the north boundary is an office complex and a lumber yard. Across the Monocacy River on the west boundary are industrial development and warehouses. The land on the east boundary is a mix of heavily forested land, agricultural fields, and single-family homes. Land on the south is still mostly agricultural, with some residential development mainly along MD 355 in the Araby Church rural village. Residential development is encroaching from the south as the planned community of Urbana expands north.

### **Frederick County**

Frederick County lies within the Washington, D.C.–Maryland–Virginia–West Virginia metropolitan area. The 2000 population for Frederick County was 195,277. Its racial composition was 89.3% white (compared to 64% for the entire state of Maryland and 75.1% for the United States as a whole), 6.4% black (or African American) (27.9% for Maryland, 12.3% for the nation), 1.7%

Asian descent (4% for Maryland, 3.6% for the nation), and 2.4% Hispanic or Latino descent (4.3% for Maryland, 12.5% for the nation). County public school enrollment was 43,418, with an additional 10,587 in college or graduate school. The median household income was \$60,276 (U.S. Bureau of the Census 1999). The 1999 per capita income was \$25,404, which was 99.2% of the state and 118% of the U.S. average. From 1989 to 2000, the average annual growth rate in per capita income was about 5.7% (by comparison, the statewide growth rate for per capita income was 4.4%). In 1999, 4.5% of Frederick County residents lived below the poverty line (compared to 8.5% for the state of Maryland and 12.4% for the United States).

There were approximately 107,151 people aged 16 or more in the labor force in 2000. The unemployment rate was 2.2%, or 3,289 individuals. The largest employers were in the census categories of educational, health and social services (18.4%), professional, scientific, management, administrative, and waste management services (12.7%), retail (11.6%), construction (10.1%), manufacturing (8.5%), finance, insurance, real estate, and rental and leasing (8.2%), and public administration (7.9%).

Frederick County had a total of 73,017 housing units in 2000, of which 75.9% were owner-occupied.

Frederick, with 52,767 people, is the largest city in Frederick County. It was incorporated as a municipal corporation in which the chief executive officer is the mayor and the legislative body is the

board of aldermen. The city provides police and fire protection.

Although Monocacy National Battlefield facilities are served by individual septic systems, Frederick County has sewer and water lines that run across the national battlefield. Water and sewer lines run parallel east-west along the river through the national battlefield, with branch lines that cross the Monocacy River running south along Bush Creek to Urbana.

Electrical power is provided by Allegheny Power, which has lines along MD 355, Araby, and Baker roads through the national battlefield.

Nearby communities are Bartonsville (population 800) and the unincorporated Urbana, Buckeystown, and Ijamsville.

## **TRANSPORTATION, ACCESS, AND CIRCULATION**

### **Background**

The discussion of transportation in this document covers the effect on regional and local transportation networks surrounding and traveling through the national battlefield. It also includes the battlefield's existing transportation network of trails, roads, and parking areas. Access and circulation is a critical component of this topic.

### **Regional Transportation Networks**

The great population and employment growth occurring in the region has placed ever greater demands on the region's highway and transit networks. The several regional transportation networks that surround and cross

Monocacy National Battlefield are described below.

**Interstate Highway 270.** Built during the 1950s, I-270 is a multilane expressway and a vital link between I-70 in Frederick County and the I-495 Beltway that surrounds Washington, D.C. The 1998 average daily traffic (ADT) volumes in the Frederick area were recorded at 71,250 ADT. Traffic volume projections for 2025 show a 76% growth rate, or 125,600 ADT (per *Draft I-270/US 15 Multi Modal Corridor Study Environmental Impact Statement*, U.S. Dept. of Transp. and Maryland Dept. of Transp. 2002). Unfortunately, this road corridor passes through the heart of the national battlefield, bisecting areas of major engagement between the Confederate and Union forces on the Worthington and Thomas farm fields.

The view of and noise from I-270 dominates the landscape and detracts from the contemplative atmosphere of the national battlefield, making it difficult for visitors to visualize troop movements and major points of engagement. The highway also creates a major physical barrier to effective circulation between farmsteads.

The Maryland State Highway Administration has commissioned an environmental impact study (currently underway) to develop alternatives and assess the impacts of plans to relieve congestion and improve safety along this corridor. Some alternatives would involve widening the expressway to create high occupancy lanes (HOV) or more general purpose lanes. This could result in the addition of four more lanes to the expressway, which would entail



acquiring more right-of-way. Such an action would take valuable battlefield real estate, exacerbating the existing visual and audible intrusion of the highway.

**Maryland Highway 355 (Urbana Pike).** Maryland Highway 355 (the Urbana Pike), a two-lane rural major collector road, is one of the most heavily traveled roads in the region. The highway, which parallels I-270, serves as an alternate north-south commuter route (especially when I-270 is unusually congested). Steep grades, rolling terrain, poor sight distance, and many private entrances restrict its traffic-carrying capacity. In addition to the through commuter traffic, Urbana Pike also serves local traffic traveling between Urbana and Frederick.

In 2003 the National Park Service contracted for a transportation study and requested that the contractor examine the existing traffic circulation and develop alternatives for improving circulation in the battlefield. The “Monocacy National Battlefield Transportation Plan” prepared by HNTB Corporation involved traffic counts on MD 355 in September 2003, which recorded an average daily traffic volume northbound of approximately 5,500 ADT. Southbound traffic was almost 36% higher, at 7,500 ADT, for a total volume of 13,000 ADT (HNTB Corporation 2003). This compares with the volumes published in the 2001 Frederick County volume map prepared by the Maryland Highway Administration. The map shows Urbana Pike (MD 355) with an annual average daily traffic volume of 17,875 to the north of the

battlefield and 8,675 to the south of the battlefield.

Speed studies indicate that 30%–42% of the traffic volume exceeds the posted speed of 50 miles per hour. The accident rate for the stretch of MD 355 that travels through the national battlefield is comparable to the statewide rate but higher than the county rate.

Urbana Pike gives access to a number of major battlefield features — the visitor center, Best Farm, Gambrill Mill, Monocacy River, Araby Church Road, and the 14th New Jersey, Daughters of the Confederacy, and Maryland monuments.

**CSX Railroad.** The CSX Railroad, known as the B&O Railroad at the time of the battle, maintains its mainline operation along the original railroad alignment, which parallels Bush Creek in a southeast-northwest alignment until it crosses the Monocacy River, then it approaches Frederick Junction, where it angles into more of a west-southwest alignment paralleling the Monocacy River. This once vital link for conveying Union troops to Frederick Junction just ahead of the Confederate advance on Washington is now a vital link for modern freight transportation on the largest rail network in the eastern United States.

CSX Transportation, a subsidiary of the CSX Corporation, which maintains operation of the CSX railroad, is headquartered in Jacksonville, Florida. The romantic notion of witnessing rail traffic along this historic alignment enhances the visitor experience, but it poses a physical barrier and safety hazard for visitors seeking access to

some battlefield features north of the railroad. The railroad bridge over the Monocacy River is an attractive means of reaching the area, but this way is hazardous and illegal.

The railroad, in its commitment to employee and public safety, is firmly opposed to establishing any at-grade crossing. Both federal and state government policies discourage the creation of new at-grade crossings. In the alternatives of this plan, if crossing the railroad right-of-way was necessary to reach battlefield features, at-grade crossings would be avoided, and bridge alternatives would be pursued. This could include either a bridge over the CSX right-of-way or a bridge under the CSX right-of-way adjacent to the CSX bridge abutment on the south bank of the Monocacy River.

#### **Maryland Rail Commuter Service.**

The Maryland Rail Commuter (MARC) Brunswick Line, a commuter rail service operated by Maryland Transit Administration (MTA), has been extended into Frederick, with passenger service beginning in December 2001. It provides train service from Frederick to Union Station in Washington, D.C. Three morning departures from Frederick at leave at 5:17, 6:10, and 7:15; three afternoon return trips from Washington depart at 3:55, 5:10, and 6:25. The approximate running time is 1 hour and 25 minutes, with one-way fares costing \$6.50. There are two stations in Frederick, one in downtown Frederick and one at Monocacy Station, which was recently developed just north of the national battlefield. Monocacy Station has a parking capacity of 800 spaces.

#### **Local Transportation Networks**

The two county roads described below are on the south side of the national battlefield; they provide access and circulation for battlefield visitors and local residents.

**Araby Church Road.** Araby Church Road, formerly part of the original Old Georgetown Pike alignment during the time of battle, is a low volume, two-lane paved county road. It accesses MD 355 opposite the entrance to the Gambrill Mill and runs 2.5 miles to the south, where it ends at a second intersection with MD 355. During a 2003 transportation study conducted by HNTB, the recorded average daily traffic volumes northbound were approximately 200 ADT; the southbound traffic was 243 ADT, for a total traffic volume of 443 ADT. This road principally is used for access to the Thomas Farm, the Pennsylvania Monument, Baker Valley Road, and a number of single family homes.

**Baker Valley Road.** Baker Valley Road is a low volume, two-lane paved county road that parallels the Monocacy River and travels under the I-270 corridor between Araby Church Road and MD 80. During the 2003 transportation study, the recorded average daily traffic volumes eastbound were approximately 454 ADT; westbound traffic was 562 ADT, for a total volume of 1,016 ADT. A number of battlefield features can be reached from this road, including the 10th Vermont Monument, the Thomas, Worthington, Lewis, and Baker farms, and a number of single family homes.

## **Battlefield Transportation Networks**

Few access roads are available in the national battlefield, and there is little parking. Most of the principal access ways are existing county and state roads. For farmsteads, existing historic access routes such as farm lanes or driveways have been used to reach NPS properties. Unfortunately, the transportation networks such as I-270, MD 355, and the CSX railroad act as physical barriers to effective circulation in the national battlefield, making it difficult to connect various features of the battlefield.

**Access Roads and Parking.** Each of the five farmsteads in the national battlefield has gravel farm lane access from existing county roads or a state highway. The Worthington, Thomas, Lewis, and Baker farms use Baker Valley Road; the Best Farm is reached via Urbana Pike (MD 355). The Thomas farm also has a formal paved driveway giving access to Araby Church Road. Gambrill Mill has a paved access road to Urbana Pike (MD 355).

Gambrill Mill is reached by a paved driveway that leads to a small parking area near the mill. The drive continues on to the Gambrill House at the top of the hill. The battlefield maintenance structure also can be reached by a gravel road from this drive, just north of the Gambrill Mill. The parking area near the mill has space for 12 cars plus 2 spaces for “handicapped” parking. There are no spaces for oversized vehicles; buses or recreational vehicles must be parked along the road shoulder and go up to the Gambrill House to turn around. More parking areas are available for administrative or operational purposes, one near the east side of the mill; a gravel lot

near the maintenance building; and two parking areas near the house, one paved and the other gravel surfaced.

No formal parking areas are available for the battlefield’s five monuments, although there is an access road to the 14th New Jersey Monument. All others can be reached by pulling the cars off onto the shoulder of adjacent roadways.

**Trails.** There are three interpretive hiking trails in the battlefield. The Worthington Farm trail starts at a small five-vehicle parking area off Baker Valley road. There are no spaces for oversized vehicles; bus tours are escorted up to the Worthington house. The trail follows the gravel farm lane for 0.8 mile to the Worthington farmhouse, where there are two loop trails. The Worthington-McKinney Ford loop, which is 1.6 miles long, takes visitors down to and along the Monocacy River, where the Confederates forded the river and staged their troops for the upcoming assault on the Union flank. The trail ends back at the Worthington Farmhouse. The Brooks Hill Loop, 1.9 miles long, takes visitors up to and along Brooks Hill before returning to the house.

The second interpretive hiking trail starts at the parking area of the Gambrill Mill. This 0.5 mile loop trail parallels the Monocacy River and offers views of the B&O railroad bridge before turning east to parallel Bush Creek. The trail turns back to the Gambrill Mill at an old wagon road that once crossed Bush Creek to connect Georgetown Pike with Reels Mill Road to the northeast, which gave the Union Troops an avenue of retreat from the Confederate advance.

The third trail, the Thomas Farm Trail, is a loop trail that begins and ends on the Thomas Farm. It crosses an open field following an old road trace between the Thomas and Worthington farms. Where the trace has been truncated by I-270, the trail turns northeast following the tree line, then southeast and southwest along the fenceline, reconnecting to the trace and returning to the farmstead.

## **NATIONAL BATTLEFIELD OPERATIONS**

### **The Staff**

Monocacy National Battlefield is a relatively new National Park Service area. Visitation began in 1991 with the opening of the Gambrill Mill visitor contact station. It was replaced in 2007 by a full-service visitor center.

The national battlefield is administered by a superintendent, with a support staff of 14 employees. The permanent support staff consists of a chief of resource education and visitor services, three interpretive park rangers, two law enforcement rangers, one natural resource manager, one cultural resource manager, one facility manager, three maintenance workers, and one historian / NPS liaison with the Catoclin Center. This permanent staff is augmented by additional seasonal staff and a corps of volunteers.

### **Resource Education and Visitor Services**

The Division of Resource Education and Visitor Services is responsible for interpreting identified national battlefield themes, offering education services

for diverse audiences, and giving visitors information and orientation through personal and nonpersonal services such as the national battlefield's Web site, publications, exhibits, and the Volunteers-in-Parks program.

The Monocacy National Battlefield interpreters operate out of offices in the new visitor center. During operating hours the information desk is staffed by an interpretive ranger or a volunteer. The person at the information desk serves as the center of interpretive activities, greeting visitors, operating the book sales outlet, and answering questions about the national battlefield and its history.

School groups generally pre-schedule their visits to the battlefield. Typically a school group will be assigned an interpretive ranger, who will explain the site's history and its importance to American history. In favorable weather these groups are accommodated outside, but during inclement weather such groups can be accommodated in the new visitor center.

### **Resource and Visitor Protection**

The state of Maryland and the National Park Service share concurrent jurisdiction over lands within the legislative boundary of Monocacy National Battlefield. NPS rangers enforce federal and state laws within the boundaries. The Maryland State Police, the Maryland Department of Natural Resource Police, the Frederick County Sheriff's Department, and the Frederick City Police Department help the rangers with incidents when necessary.

Roads that run through the national battlefield are MD 355, I-270, the Baker Valley Road, and Araby Church Road. Motor vehicle accidents, which are frequent, are investigated primarily by the Maryland State Police and the Frederick County Sheriff's Department. Several small NPS lanes within the boundary are open to vehicle traffic, and any accidents that occur on those roads or that damage NPS resources or property are investigated by NPS rangers. Rangers also assist state and local authorities with traffic control and patient care associated with traffic accidents that occur on state or county roads.

Crimes that can harm NPS resources in the national battlefield are vandalism to historic structures, illegal relic hunting, trash dumping, and wildlife poaching. NPS rangers monitor these activities and apprehend violators. Most parking areas that are adjacent to state and county roadways are closed in the evening to deter vandalism and crimes. The Monocacy Junction and river access lots are not easily gated because of rights-of-way held by CSX and their proximity to MD 355; those areas become attractive spots for after-hours illegal activities.

Recreational use of the Monocacy River, which runs through the national battlefield, is common. Popular activities are fishing, tubing, and canoeing. Rangers patrol the river on foot and by vehicle. The most common violations observed are fishing violations, littering, possession of alcohol in a closed area, pets off leash, and closure violations (the battlefield is closed after dark). Other violations include illegal camping and

possession or use of controlled dangerous substances. The river accounts for a large percentage of case incident reports completed by NPS rangers.

Monocacy National Battlefield's operating hours generally follow daylight patterns, so that the battlefield is open for more hours in summer. The gates are locked after hours to secure areas. The primary law enforcement concerns are resource violations such as hunting, metal detection, and closure violations. The increasing urbanization and development has led to increasing crime; this is a concern from the perspective of resource management and visitor protection.

### **Resource Management**

The resource management divisions are primarily concerned with identifying, protecting, and interpreting the battlefield's cultural and natural resources. The national battlefield's resource management team at present consists of one natural resource manager and one cultural resource manager.

Although the natural and cultural resource divisions sometimes have different priorities with regard to resource management, they share three central goals — (a) to discover the significance or meaning of each resource, (b) to slow the rate at which the essential qualities of a resource are lost or altered, (c) to support the use and enjoyment of cultural and natural resources while minimizing negative effects on them. Although the corresponding activities are emphasized differently within the divisions, the

foundation of natural and cultural resource management can be summarized as three broad functions: research, planning, and stewardship.

Research begins by locating and evaluating cultural and natural resources through historical analysis and detailed physical examination. It can include establishing baseline information about natural or cultural resources, determining the significance or integrity of a resource, or documenting existing conditions.

Planning addresses the basic question of how to best care for natural and cultural resources while allowing the public to enjoy them.

Stewardship consists of executing systematic, responsible actions that will directly affect cultural or natural resources, and it is the result of sound research and planning efforts. Stewardship, which seeks to limit the loss of the character-defining attributes of the battlefield's cultural or natural resources, results in the perpetuation and appreciation of these resources.

### **Facility Management**

The maintenance division is responsible for the preservation and maintenance of a variety of national battlefield structures and cultural resources. The division faces the challenging task of

slowing or preventing decay in the 51 historic structures listed on the national battlefield's list of classified structures. The division also must also operate and maintain all the other more modern national battlefield facilities and equipment — utilities (water, wastewater, power, and solid waste), structures, grounds, fences, monuments, visitor use areas, trail systems, picnic areas, roads, signs, vehicles, and other features of the battlefield. This also includes managing projects and contracts, along with janitorial services.

Current asset condition of park facilities as reported 7/2005 through the NPS Facility Management Software System (FMSS) indicates the battlefield has a total deferred maintenance backlog of over \$6 million. (This does not include the deferred maintenance needs for the Gambrill House as this structure is maintained by the NPS Historic Preservation Training Center). Over 73% of this backlog represents the estimated need to rehabilitate the battlefield's historic structures, many of which have been recently acquired. Every fiscal year, park staff have requested and received funding to systematically reduce this backlog. It is expected that this trend will continue until the deferred maintenance backlog has been eliminated.