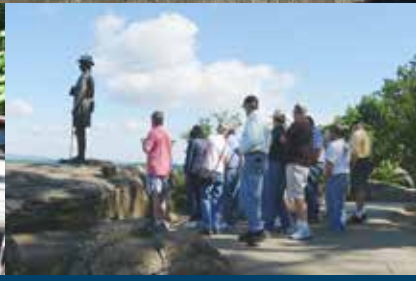
National Park Service
US Department of the Interior

Gettysburg National Military Park
Pennsylvania

Gettysburg National Military Park

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

April 2017



Cover Photo by: VHB

United States Department of the Interior
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Gettysburg National Military Park (the park) is located on 6034 acres of land in Adams County, Pennsylvania. The park was established in 1895 with the purpose of preserving the lines of battle, for marking the positions occupied by both armies on the field and for opening and improving avenues along the positions occupied by troops upon those lines. These positions were to be marked with suitable tablets, compiled "without praise, or censure." In addition, important topographical features of the battlefield are to be preserved.

The National Park Service (NPS) proposes to improve vehicle circulation patterns, parking areas, pedestrian circulation, and gathering areas within the Little Round Top area. The purpose of the proposed action is to provide solutions for overuse, overcrowding, and landscape degradation, as well as identify appropriate locations for visitor accommodations within the project area.

This document was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). This environmental assessment/assessment of effect (EA/AoE) examines two alternatives: the no-action alternative and the proposed action. The proposed action would result in both adverse and beneficial impacts on visitor use and experience, soils, vegetation, cultural landscapes, historic structures, and archeological resources. These impacts would be associated with construction activities, vehicle circulation patterns, parking capacity, pedestrian circulation patterns, and visitor gathering capacity.

Note to Reviewers and Respondents:
If you wish to comment on this environmental assessment/assessment of effect, you may you may post your comments on this document electronically at http://parkplanning.nps.gov/GETT within 30 days of release of this document. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
AoE	Assessment of Effect
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DO	Director's Order
EA	Environmental Assessment
ITS	intelligent transportation system
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
the park	Gettysburg National Military Park
PNDI	Pennsylvania Natural Diversity Inventory
USFWS	US Fish and Wildlife Service

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PURPOSE AND NEED

The events that occurred during the Battle of Gettysburg and the iconic views that directly contribute to its strategic, cultural, and historic significance make Little Round Top one of the most heavily visited sites within the Gettysburg National Military Park (the park). Current visitation levels at Little Round Top far exceed the present capacity of the site's trails, which is defined by the cultural landscape report as 283 people, causing considerable and recurring damage to both natural and cultural resources (NPS 2012). Individuals and groups often stray from the authorized trail system onto a web of unauthorized trails and gathering spaces; these have been worn into the landscape by visitors wishing to make their own connections between monuments and key views throughout the site. Little Round Top has degraded over time, and this environmental assessment/assessment of effect was developed to establish a plan for rehabilitating Little Round Top while maintaining an appropriate visitor experience.

This environmental assessment/assessment of effect was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA); the regulations of the Council on Environmental Quality (CEQ) (40 CFR 1500- 1508); and the NPS Director's Order (DO) 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2011) and accompanying NPS NEPA Handbook (NPS 2015). In addition, the National Park Service is integrating the NEPA compliance process with that for Section 106 of the National Historic Preservation Act of 1966 and using the NEPA documentation and coordination processes for Section 106 compliance pursuant to 36 CFR 800.8(c); therefore, this environmental assessment also serves as an assessment of effect to historic properties under Section 106.

PURPOSE OF AND NEED FOR ACTION

The purpose of this project is to preserve the site by providing solutions for overuse, overcrowding, and landscape degradation, as well as to identify appropriate locations for visitor accommodations at Little Round Top, one of Gettysburg National Military Park's most heavily visited sites. This project is needed because current levels of visitor use at Little Round Top exceed infrastructure designs. During peak season, there are more visitors than current parking areas and authorized trails are designed to handle. High numbers of visitors result in overcrowding, which compromises the visitor experience and resource protection. Overcrowding and overuse lead visitors to step off authorized trails (defined as all NPS sanctioned pedestrian routes, including everything from paved walkways to single track dirt paths) and create their own routes to certain monuments and markers, which in turn leads to soil compaction, erosion, and vegetation loss and damage. The off-season, when visitation is lower, does not provide the

landscape enough time to heal. The park seeks to accommodate peak season visitor numbers and needs and to provide an appropriate level of access while ensuring the protection and stewardship of this culturally and historically significant site.

Visitors use roadways to access the project area by foot, bicycle, Segway, tour bus, and passenger vehicle. Currently, passenger vehicles and buses are parked along the roadsides leading to the summit during the peak season when parking spaces are not available. Because the summit parking area is not visible over the crest of the hill, visitors familiar with the limited parking may choose to park along the sides of the road before reaching the summit because they know that if no spaces are available they are required to drive the entire vehicle circulation route again. Visitors unfamiliar with the parking spaces at the summit may choose to park along the side of the road before reaching the summit because they see other cars parked along the side of the road and follow the traffic pattern. Buses drop off their passengers on the opposite side of the road from the summit of Little Round Top, requiring passengers to cross the road. In some instances, buses drop off their passengers on the summit side of the parking area, requiring riders to step into the flow of traffic before heading east to the summit. Parked buses and cars restrict sight lines as pedestrians and visitors on bicycle and Segway navigate between vehicles. Guided and unguided tour groups often impede visitor flow, as they spend prolonged amounts of time near monuments, artillery pieces, and vistas, contributing to congestion on already crowded trails and gathering areas. In addition, there is no formal on-site guidance or orientation outside of guided tours to direct visitor flow, and the current authorized trails pose accessibility issues. As a result, many unauthorized trails exist, which visitors use to access monuments and markers in a manner they find more convenient than by the authorized trails.

PROJECT AREA AND AREA OF POTENTIAL EFFECT

The park is located in south-central Pennsylvania, just 75 miles from Washington, DC; 55 miles from Baltimore, Maryland; and 37 miles from Harrisburg, Pennsylvania. Little Round Top, which played a central role in the Battle of Gettysburg, is located in the southeastern corner of the park. Little Round Top is a site featured on the park's self-guided auto tour which takes visitors to 16 locations tracing the three-day Battle of Gettysburg in chronological order. Figure 1 shows the project area vicinity and auto tour route. The project area includes the area bound by Wheatfield Road to the north, Taneytown Road to the east, Wright Avenue and Warren Avenue to the south, and Crawford Avenue to the west, as well as the area around the Round Top Schoolhouse. This approximately 171-acre area encompasses the Little Round Top summit, including Sykes Avenue, and contains numerous monuments and markers, defensive works, and fencing. Terrain leading up to the summit is steep and rocky, densely forested in some areas, and covered with grasses and shrubs in others. See figure 2 for a map of the project area.

In compliance with NHPA Section 106 regulations (36 CFR 800), an area of potential effect was also defined for this project, as shown on figure 2. The area of potential effect is defined as the geographic area in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties if such properties exist.

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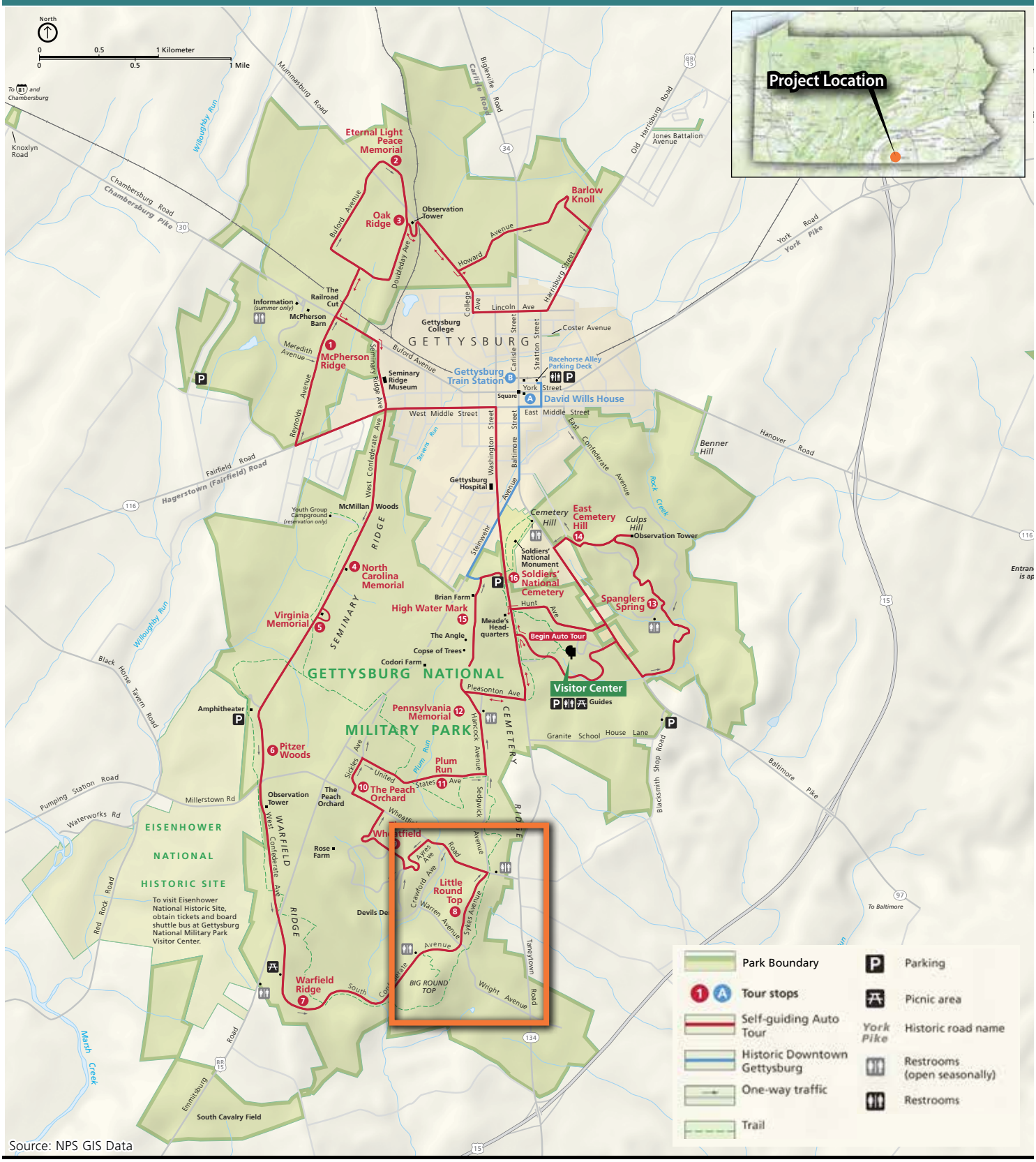
Gettysburg National Military Park



Source: NPS GIS Data

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FIGURE 1
Project Vicinity Map

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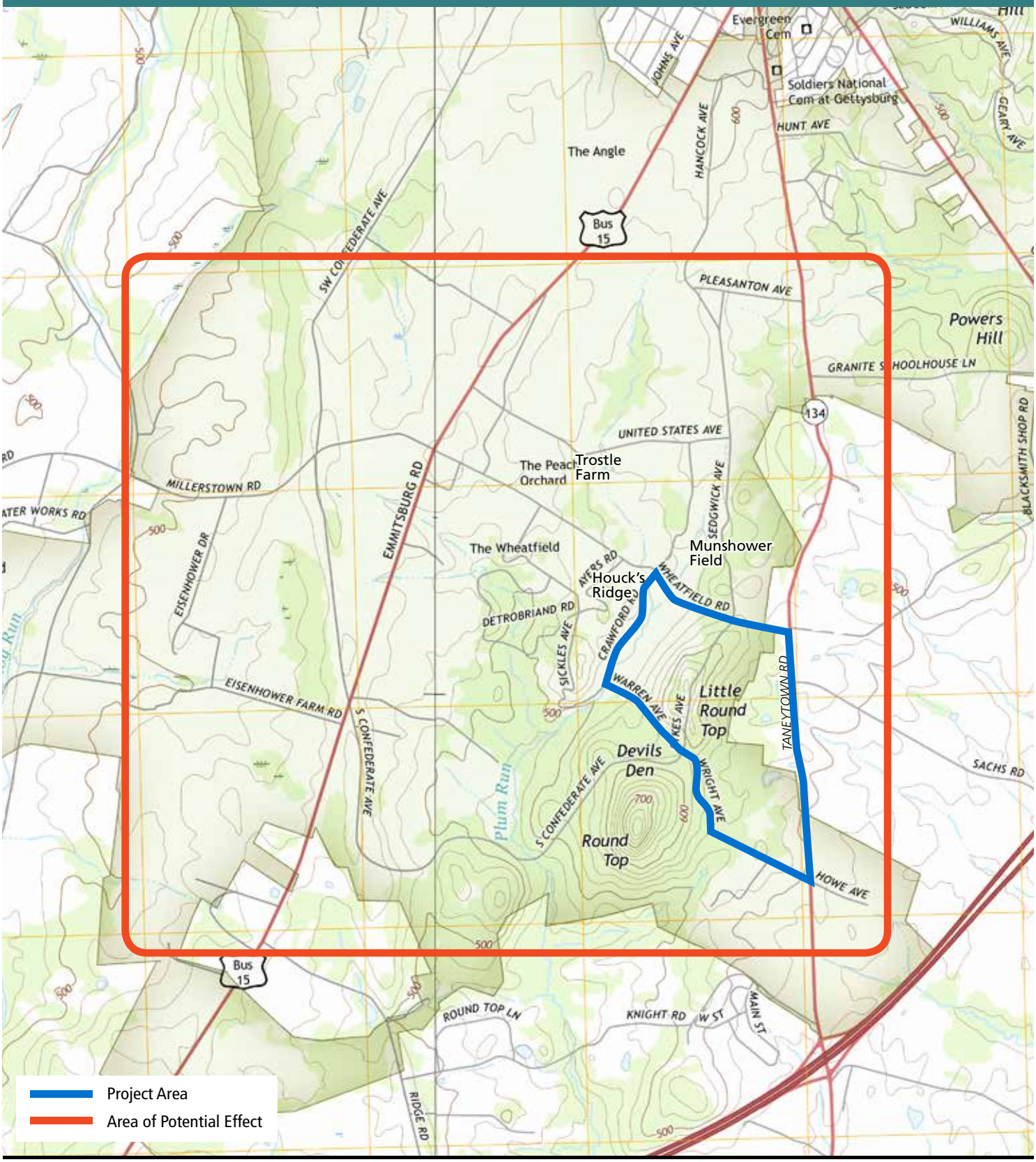
Gettysburg National Military Park



NORTH

0 SCALE IN FEET 2,000

Source: NPS GIS Data; USGS 7.5 minute
Fairfield and Gettysburg, PA Quadrangles

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FIGURE 2

Project Area and Area of Potential Effect

The area of potential effect for this project includes the project area as described above plus the surrounding historic roads, farms, sites, and other historic properties from which the project area is visible. These properties include United States Avenue, Trostle Farm, Munshower Field, Houck's Ridge, Emmitsburg Road, South Confederate Road, Crawford Avenue, and Devil's Den.

HISTORY AND SIGNIFICANCE OF GETTYSBURG NATIONAL MILITARY PARK

Gettysburg National Military Park is the site of the American Civil War Battle of Gettysburg, the Gettysburg National Cemetery, and the commemoration of the great battle by Civil War veterans. The Battle of Gettysburg was the one of the largest and bloodiest to occur on the North American continent and contributed to the ultimate preservation of the United States. Ever since the immediate post-Civil War years, private and government organizations have struggled to simultaneously preserve and provide access to the important battlefield and commemorative landscape at Gettysburg. Important sites on the battlefield were preserved immediately after the 1863 battle, and the Gettysburg Battlefield Memorial Association, a state-chartered corporation, presided over the preservation of Gettysburg battlefield from 1863 to 1895. Congress established the park in 1895, at which point the War Department took over management responsibilities. Management of the park, including the preserved sections of the battlefield and Gettysburg National Cemetery where President Abraham Lincoln gave the Gettysburg Address, was transferred from the War Department to the National Park Service in 1933.

The park's mission is "to preserve and protect the resources associated with the Battle of Gettysburg and the Gettysburg National Cemetery, and to provide understanding of the events that occurred here, within the context of American history" (NPS 1999). Administered by the National Park Service since 1933, the park now comprises 6,034 acres of land, across which the battle, its aftermath, and commemoration occurred.

More than 1,700 monuments and cannons were placed in the park by battle survivors to commemorate their comrades who served or fell in battle. The park also owns collections of more than one million artifacts, printed texts, historic photographs, and other archival documents. These collections are notable because the great majority of them are directly related to the Battle of Gettysburg and the creation of the park.

As a result of the various initiatives to identify and understand historic properties, the National Park Service identified three landscapes and their associated resources in the park's 1999 General Management Plan as nationally significant (NPS 1999). These landscapes were recognized in the 2004 National Register of Historic Places (National Register) documentation (NPS 2004). The landscapes of significance are the historic field of the Battle of Gettysburg, the Gettysburg National Cemetery, and the commemoration of the battle by its veterans. The period of significance for the park is 1863–1938, which includes the battle and its commemoration. The care taken by veterans during the development of the narrow commemorative corridors helped to ensure that the important topographical features were preserved and the battlefield retained most of its defining natural and cultural features.

HISTORY AND SIGNIFICANCE OF LITTLE ROUND TOP

One of the most significant actions of the Battle of Gettysburg was the battle for Little Round Top, which began in the late afternoon of July 2, 1863, and ended in the evening of the same day. Realizing the strategic importance of Little Round Top, Union General Gouverneur K. Warren called for troops to defend the top of the hill. Regiments from Maine, Michigan, New York, Pennsylvania, and Massachusetts arrived at the summit to defend against Confederate regiments from Alabama and Texas. After a fierce battle, the Union successfully held their line, and Little Round Top was secure.

As defined by its National Register nomination form, the period of significance for the park and Little Round Top is 1863 to 1938. The period of significance is divided into two eras, the Battle Era (1863) and the Commemorative Era (1864-1938). 1938 represents the 75th anniversary of the Battle of Gettysburg and the last Blue and Gray Reunion, a reunion of surviving Civil War veterans from the both the north and the south, which was held at the park.

Character Defining Features

Little Round Top. Rising 160 feet above the surrounding terrain, the western slope of Little Round Top had been cleared of most timber a year or more before the battle; this afforded excellent observation and fields of fire from its summit to the west, northwest, and southwest. On July 2, the Union army anchored its left flank upon it and repulsed several attempts by Confederate infantry to capture it. The hill's boulder-strewn slopes provided Union infantry ample materials to build stone breastworks during the night of July 2 and morning of July 3. The rough and steep sides of Little Round Top proved to be a substantial obstacle during the Confederate advance on July 2. Union wounded used the reverse, or eastern, slope of the hill for cover from Confederate artillery. The general appearance of Little Round Top is little changed since the battle. It still is mostly cleared of vegetation, still is boulder and rock strewn, still is precipitous, and still provides excellent and wide ranging observation from its summit.

Park Avenues. Character defining features of the avenues include their linearity, alignment, and construction methods. Sykes Avenue has been the most altered of avenues within the area of potential effect. In locations where the avenue was realigned (direct line over Little Round Top) the base is macadam, not its historic Telford. In its altered state, Sykes Avenue retains little to no integrity. Even though it has recently been repaved, Chamberlain Avenue still retains its Telford road base, its linearity, and its alignment, all of which are character defining features of the avenues.

Monuments. Although attrition and alteration of some of the park-related commemorative design features have decreased the integrity of small-scale elements (shell stones, avenue drainage, avenue section identification markers), almost every one of the 1,830 monuments, markers, tablets, and statuary within the park remain from the historic period and they retain integrity.

PROJECT BACKGROUND

PREVIOUS PLANNING EFFORTS

Little Round Top/Devil's Den Development Concept Plan

In 1986, the National Park Service created the Development Concept Plan for Little Round Top and Devil's Den to provide solutions to the environmental and cultural degradation due to heavy pedestrian use. Proposed development actions included adding additional bus and car parking spaces at the summit of Little Round Top and completing a circulation study in order to design the developed area of Little Round Top. However, the development actions proposed in this plan were never realized.

Traffic Report, Little Round Top Cultural Landscape Report

In 2011, the park conducted a transportation study to evaluate the circulation in and use of Little Round Top as part of the data collecting effort for the cultural landscape report. Included in the document were results from a May 2011 parking survey in the study area, which looked at parking supply, demand, and duration, as well as made general observations. The survey observed a maximum of 50 vehicles parked in the study area, and determined that because visitors stay in the area a relatively short time, parking should be located within 1,500 feet from the destination. This report described the existing conditions related to traffic and parking at Little Round Top and informed the development of the treatment options presented in the cultural landscape report. This environmental assessment/assessment of effect used these findings to build upon the treatment options and develop the action alternatives presented in chapter 2.

Little Round Top: Cultural Landscape Report, Treatment & Management Plan

In March of 2012, the National Park Service completed a cultural landscape report for the Little Round Top area. The cultural landscape report focused on providing documentation of the site history, existing conditions, and historic integrity in the study area. The intent of the cultural landscape report was to provide solutions for "overuse, overcrowding and landscape degradation and identify appropriate locations for visitor conveniences at Little Round Top." The document included recommended treatments for circulation and gathering options for the study area. However, the park chose to re-examine the recommended treatment plan and treatment options in order to find alternatives that better suit the park's vision for Little Round Top in the wider context of the park. The action alternatives presented in this environmental assessment/assessment of effect were developed through this re-examination of the treatment options presented in the cultural landscape report.

PLANNING ISSUES AND CONCERNS

During the scoping process, specific considerations and concerns were identified as critical to this project at Little Round Top. Along with the purpose and need for the proposed action, these topics guided the development of alternatives and contributed to the selection of impact topics, as identified in the next section.

Visitor Capacity

Little Round Top is one of Gettysburg National Military Park's most heavily visited sites. According to the *Little Round Top Cultural Landscape Report, Treatment & Management Plan* the visitor capacity of the existing authorized trails at the summit is being exceeded during peak season and special events (NPS 2012). Any proposed action must take this into consideration and take steps to better match visitor capacity of the summit with current visitor demand, acknowledging that future increases in capacity to meet an ever-increasing demand may not be appropriate.

Vehicular Circulation

Due to the amount of passenger vehicles, buses, bicycles, and Segways accessing the site, vehicular circulation is of particular concern. Current conditions should be improved and the park also wants to find ways to make the current conditions more useable. Congestion occurs below the summit when visitors park along the roadsides because they cannot see parking at the summit upon approach. If visitors continue to the summit and no formal parking spaces are available, they either park informally along the side of the road heading down the summit or are forced to complete the one-way loop over again to look for another formal parking space. Any proposed action in this plan should seek to improve vehicular circulation within the project area.

Parking

The current parking configuration and number of designated parking spaces at Little Round Top does not meet current demand. Parking needs vary based on the visitor; some visitors require short term parking options, while others require options for longer visits. Parking demand also varies seasonally, as different groups of visitors arrive at the site during different seasons. During peak times, parking capacity can be an issue due to the number of passenger cars, buses, bicycles, and Segway users at the summit. Any proposed action in this plan should address the parking capacity, visitor parking needs, and any additional issues that arise.

Pedestrian Circulation

Little Round Top sees both short-term and long-term visitors. Circulation options for both types must be considered, including direct access to monuments for short visits and loop trails for those who want to take longer walks on the site. Any proposed action in this plan should seek to improve pedestrian circulation and offer authorized walking trails within the project area.

Gathering Areas

Visitors to Little Round Top spend time at the many monuments, markers, and landmarks on the site and sometimes travel off the authorized trails when popular locations are crowded. To counter this issue, larger gathering areas have been deemed appropriate at some of the more popular landmarks. These areas must be accessible, provide more space than is currently available for use, provide good views to enhance interpretation, and provide relevant views from a place based location. Any proposed action in this plan should take into account how gathering areas would be used to provide appropriate locations and capacities for visitor demands.

Visitor Orientation and Comfort

The creation of the Little Round Top orientation station is under consideration because the park needs to be able to provide visitors with information so they can best make decisions about how to use the site. Restrooms are another consideration because though there are temporary restrooms on the site, the park would like to improve visitor comfort by providing a permanent restroom facility. The Round Top Schoolhouse, which is considered a contributing resource to the Gettysburg Battlefield Historic District is a resource that could be used for restrooms and visitor orientation information because a parking area is proposed for this location. If visitors park at this location, they would require wayfinding and orientation to direct them to the summit. The character defining features of the Round Top Schoolhouse are its exterior façade and materials; therefore, adaptive reuse of the structure should maintain the exterior features and façade. Any proposed action in this plan should seek to provide orientation and wayfinding information, as well as restroom facilities.

IMPACT TOPICS

IMPACT TOPICS RETAINED FOR ANALYSIS

Visitor Use and Experience

Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks (NPS 2006). The National Park Service strives to provide opportunities for forms of enjoyment and education that are uniquely suited and appropriate to the natural and cultural resources found in parks. Currently, the visitor experience is degraded due to heavy visitation and trails and gathering areas that are often crowded and over capacity. Additionally, the limited parking at the summit leads to visitors unsure where they are supposed to park to access the summit. The proposed action is meant to enhance the visitor experience, which encompasses interpretation, understanding of the park, enjoyment, safety, circulation, and accessibility. Therefore, the impact topic of visitor use and experience is retained for further analysis in chapter 4.

Soils

Large numbers of visitors contribute to the degradation of the natural landscape and erosion of soils by travelling off of the asphalt trails, creating unauthorized trails, and parking along the roadside. This is a result of gathering areas and trails that do not meet the capacity demand and limited parking at the summit. Visitors often choose to walk off of the authorized trails. Compaction of soils on these unauthorized trails then increases as more visitors use the trails. The proposed action would protect or rehabilitate previously disturbed or eroded soils in some areas and increase soil compaction in other areas. Therefore, the impact topic of soils is retained for further analysis in chapter 4.

Vegetation

Currently, some vegetation in the project area is trampled due to heavy foot traffic and visitors stepping off of authorized trails. This is particularly the case along the edges of formal trails and gathering areas of the summit and along unauthorized trails throughout the project area. Also, the forested area near the 20th

Maine Infantry monument lacks sufficient understory to support the natural regeneration of hardwood trees due to heavy foot traffic and brush clearing in the area. The proposed action includes closing unauthorized trails, formalizing some unauthorized trails, and temporarily closing some authorized trails to allow sensitive areas to revegetate. In addition, there would be disturbance and removal of vegetation associated with proposed parking areas, trails, and gathering areas. Therefore, the impact topic of vegetation is retained for further analysis in chapter 4.

Cultural Landscapes

The cultural landscape of Little Round top is an important aspect of the site's historic and cultural significance. According to the NPS Director's Order 28: Cultural Resource Management (NPS 2002), a cultural landscape is

> …a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting the cultural values and traditions.

In addition to the human use associated with cultural landscapes, the development of the landscapes is tied to and includes topographic features and relief, site elevation, slope orientation, rock exposure, and modification of soil types and vegetation. Currently, soil erosion and vegetation trampling due to heavy foot traffic is putting some features of the cultural landscape at risk. Additionally, the implementation of any of the proposed alternatives would result in changes to visual features of the landscape, including the introduction of modern materials and the protection against future erosion of slopes and natural features. Therefore, the impact topic of cultural landscapes is retained for further analysis in chapter 4.

Historic Structures

The project area contains a number of historic buildings, monuments, and structures within its boundaries. A historic structure is defined by the National Park Service as "a constructed work, usually immovable by nature or design, consciously created to serve some human act" that is listed in, or eligible for listing in, the National Register (NPS 2006). The markers, monuments, and earthworks on Little Round Top are classified as structures, and may be subject to impacts by the proposed action. Some historic structures are currently at risk of damage due to erosion of the soils upon which they sit and from direct visitor contact, particularly of stone earthworks. Authorized trails and gathering areas would assist in maintaining an appropriate distance between visitors and sensitive historic structures than are currently reached by unauthorized trails. Therefore, the impact topic of historic structures is retained for further analysis in chapter 4.

Archeological Resources

NPS *Management Policies 2006* states that archeological resources "will be maintained and preserved in a stable condition to prevent degradation and loss" (NPS 2006). There has not been a comprehensive survey of archeological resources within the project area, and therefore, the National Park Service does not have a complete understanding of the existence and condition of archeological resources at Little Round Top. Therefore, until more surveys and testing are undertaken, the National Park Service intends

to treat the entire project area as archeologically sensitive. Some ground disturbance would occur during construction of parking lots, trails, and gathering areas, which has the potential to impact unknown archeological resources if they occur in these areas. Erosion of soils due to heavy foot traffic is an existing concern at the summit and it is unknown if any archeological resources exist in these sensitive soils. The proposed action has the potential to protect unknown archeological resources that may be intact in these areas by limiting visitor access to unauthorized trails and sensitive areas. Therefore, the impact topic of archeological resources is retained for further analysis in chapter 4.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Rare, Threatened, and Endangered Species

Federally-listed Species. The project area is within the range of several federally-listed rare, threatened, or endangered species. These species include the northeastern bulrush (*Scirpus ancistrochaetus*) flowering plant, the Indiana bat (*Myotis sodalis*), the Northern long-eared bat (*Myotis septentrionalis*), and several species of migratory birds. Impacts to these species would be avoided for all actions proposed in this environmental assessment/assessment of effect. No action proposed would take place within or adjacent to wetlands, which some species use as habitat. Tree clearing and construction would be avoided during the sensitive roosting and pupping seasons of the Indiana bat and the Northern long-eared bat, and surveys for active nests of migratory birds would be conducted prior to construction as needed. Therefore, this project may affect, but is not likely to adversely affect federally-listed species. In a Pennsylvania Natural Diversity Inventory (PNDI) environmental review dated January 11, 2016, the US Fish and Wildlife Service responded that no impacts to federally listed or proposed species are anticipated. The National Park Service would reinitiate consultation in the unlikely event that any federally listed threatened or endangered species are encountered during construction.

State-listed Species. A PNDI environmental review dated January 11, 2016 concluded that the project area is within the range of several state-listed rare, threatened, or endangered species. These include puttyroot (*Aplectrum hyemale*), brown sedge (*Carex buxbaumii*), rigid sedge (*Carex tetanica*), Dion skipper (*Euphyes dion*), grass-leaved rush (*Juncus biflorus*), short-fruited rush (*Juncus brachycarpus*), Heller's witchgrass (*Dichanthelium oligosanthes*), giant swallowtail (*Papilio cresphontes*), downy phlox (*Phlox pilosa*), Shumard's oak (*Quercus shumardii*), and the Eastern coneflower (*Rudbeckie fulgida*). However, impacts to these species would be avoided for all actions proposed in this environmental assessment/assessment of effect. Many of these species occur in the lower elevations of Little Round Top and would be avoided by this project. Prior to any clearing activities, the National Park Service would conduct surveys as needed to identify any state-listed species occurring within the area and identify measures to avoid impacts. In letters dated February 3, 2016 and February 17, 2016, respectively, the PA Game Commission and the PA Department of Conservation and Natural Resources concluded that no impacts to these species are anticipated due to the nature of the project and the immediate location of the action proposed for the project.

Therefore, the impact topic of rare, threatened, and endangered species was considered but dismissed from further analysis.

Environmental Justice

The Department of the Interior requires its bureaus to specifically discuss and evaluate the impacts of their actions on minority and low-income populations and communities in environmental documents, as well as the equity of the distribution of the benefits and risk of the decision (NPS 2015). There are minority and low income populations in the vicinity of the park; however, these populations would not be particularly or disproportionately affected by activities associated with the alternatives evaluated in this environmental assessment. Therefore, the impact topic of environmental justice was considered but dismissed from further analysis.

Indian Trust Resources

The Department of the Interior requires its bureaus to explicitly consider effects of its actions on Indian Trust resources in environmental documents (NPS 2015). The federal Indian Trust responsibility is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal laws with respect to Native American tribes. There are no known Indian Trust resources in the project corridor, and the lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, the impact topic of Indian Trust resources was considered but dismissed from further analysis.

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ALTERNATIVES

DEVELOPMENT OF ALTERNATIVES

The alternatives development process for this environmental assessment/assessment of effect began with a review of the treatment options presented in the 2012 cultural landscape report. On October 29, 2014, the park held an alternatives development workshop which was attended by representatives from the park, the NPS northeast regional office, stakeholders, and the park's consultant. The alternatives developed during the workshop were then refined through a series of reviews, which resulted in the action alternatives presented below.

NO-ACTION ALTERNATIVE

VEHICULAR CIRCULATION AND PARKING

Under the no-action alternative, existing vehicular circulation and parking would remain. The self-guided auto tour route through the project area would remain unchanged; visitors on the auto tour would approach the summit from South Confederate Avenue, north on Sykes Avenue, and west on Wheatfield Road. Crawford Avenue would remain one-way southbound, Warren Avenue would remain one-way eastbound, Sykes Avenue would remain one-way northbound, and Wheatfield Road would remain two-way. One bus drop-off area would continue to be used at the summit. There would continue to be 36 passenger vehicle parking spaces and 1 bus parking space available at the summit, with additional space for 10 passenger vehicles at the Round Top Schoolhouse parking area and 3 passenger vehicles on Wright Avenue. The gravel area located near the intersection of Wright Avenue and South Confederate Avenue where visitors informally park would remain in place. See figures 3 and 4 for maps of the existing conditions within the project area.

Under the no-action alternative, there would continue to be space for a total of 49 passenger vehicles and 1 bus to park within the project area, for a total of 50 vehicle parking spaces.

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National Park Service
U.S. Department of the Interior

Gettysburg National Military Park

NORTH

0 SCALE IN FEET 200

Source: NPS GIS Data

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FIGURE 3
Existing Conditions

National Park Service
U.S. Department of the Interior

Gettysburg National Military Park

121st New York Infantry Monument
98th Pennsylvania Infantry Mounment
1st Ohio Light Artillery
Battery L Marker
155th Pennsylvania Infantry Marker
146th New York Infantry Monument
Warren Monument
91st Pennsylvania Infantry Marker
5th US Battery
140th New York Infantry Monument
Vincent Boulder
44th New York Infantry Monument
16th Michigan Infantry
Vincent Wounded Monument
ONE WAY
SKYES AVENUE
ONE WAY
Paved Roads and Parking
Existing Trails (widths not to scale)
Unauthorized Trails (widths not to scale)
Areas Currently Used for Gathering

NORTH
0 SCALE IN FEET 100

Source: NPS GIS Data

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FIGURE 4
Existing Conditions: Summit Enlargement

PEDESTRIAN CIRCULATION

Under the no-action alternative, trails to serve Little Round Top would be limited to existing trails that are paved and designated for pedestrians. No new trails would be added. Any trail that is not paved and designated (unauthorized) would be closed with a temporary barricade and signage. For long-term closure, the National Park Service would revegetate these unauthorized trails by aerating and seeding the soil in areas where vegetation is currently trampled.

GATHERING

Existing erosion in and near unpaved gathering areas would be stabilized with clean soil fill and grass seed under the no-action alternative. The existing paved gathering areas would remain in their current locations and configurations. None of the paved gathering areas would be expanded. No new gathering areas would be added. The current visitor capacity of the existing paved gathering areas would remain at approximately 283 people, as determined by the cultural landscape report (NPS 2012).

PROPOSED ACTION/ NPS PREFERRED ALTERNATIVE

VEHICULAR CIRCULATION AND PARKING

Under the proposed action, vehicular circulation patterns would remain the same as under the no-action alternative; however, an intelligent transportation system (ITS) could be installed to supplement infrastructure improvements and improve circulation. This system would be used to provide parking and circulation information such as when summit and bus parking lots are full, and directions to the overflow parking lot at the Round Top Schoolhouse. This information could be displayed both on-site and at the visitor center. The details of the intelligent transportation system would be determined during a later design phase, but it could include digital signs, under-paving detectors, computer hardware, and a network interface to the existing system in use at the visitor center. The following improvements would be made to parking and vehicular circulation within the project area. See figures 5, 6, and 7 for maps of the proposed action.

Sykes Avenue would be repaved and restriped from Wright Avenue to Wheatfield Road. At the summit of Little Round Top, 20 angled passenger vehicle spaces would be striped on the west side of Sykes Avenue (including 3 universally accessible spaces), and 17 parallel parking spaces for passenger vehicles would be added along the east side of Sykes Avenue. A bicycle rack would also be installed at the summit. A bus drop-off area would be created on the east side of Sykes Avenue, across from the summit. This drop-off area would be made of steel framing on posts with a surface made of wood, concrete, or metal grating, to be specified at a later design phase. The specific size and placement of the drop-off area would be determined at a later design phase; however, the maximum area would be approximately 1,990 square feet, with a maximum capacity of approximately 142 visitors.

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Gettysburg National Military Park

North section could be constructed in the future if needed.

Round Top Schoolhouse:
- 48 passenger vehicle parking spaces
- 2 universally accessible parking spaces
- 6 bus parking spaces

SEDGWICK AVENUE

WHEATFIELD ROAD

ONE WAY

SKYES AVENUE

121st New York Infantry Monument

98th Pennsylvania Infantry Mounment

1st Ohio Light Artillery Battery L Marker

Crescent Portion of Historic Sykes Avenue
- 4 bus parking spaces

155th Pennsylvania Infantry Marker

146th New York Infantry Monument

Warren Monument

91st Pennsylvania Infantry Marker

5th US Battery

Summit Area:
- 24 passenger vehicle parking spaces
- 3 universally accessible parking spaces
- Bus drop-off area

140th New York Infantry Monument

Vincent Boulder

44th New York Infantry Monument

16th Michigan Infantry

ONE WAY

WARREN AVENUE

Vincent Wounded Monument

83th Pennsylvania Infantry Monument

38th Pennsylvania Infantry Monument

20th Maine Infantry Monument

Wright Avenue:
3 passenger vehicle parking spaces

9th Pennsylvania Reserves

20th Maine Infantry Monument

WRIGHT AVENUE

Paved Roads and Parking
Crosswalk
"A" Trails: 8 feet wide, hardened surface
"B" Trails: 6 feet wide, hardened surface
"C" Trails: 4 feet wide, crushed stone surface
"D" Trails: 2 feet 6 inches wide, crushed stone surface
Decks
Terraces

Note: figure shows maximum footprints; actual sizes to be determined during future design phases

NORTH

0 SCALE IN FEET 200

Source: NPS GIS Data

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

FIGURE 5
Proposed Action

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121st New York Infantry Monument
98th Pennsylvania Infantry Mounment
1st Ohio Light Artillery
Battery L Marker
155th Pennsylvania Infantry Marker
146th New York Infantry Monument
Warren Monument
91st Pennsylvania Infantry Marker
5th US Battery
140th New York Infantry Monument
Vincent Boulder
44th New York Infantry Monument
16th Michigan Infantry
Vincent Wounded Monument
ONE WAY
SKYES AVENUE
ONE WAY
Bus Drop-off
Orientation Station
Specific location to be determined during future design phases

Paved Roads and Parking
Crosswalk
"A" Trails: 8 feet wide, hardened surface
"B" Trails: 6 feet wide, hardened surface
"C" Trails: 4 feet wide, crushed stone surface
"D" Trails: 2 feet 6 inches wide, crushed stone surface
Decks
Terraces
Note: figure shows maximum footprints; actual sizes to be determined during future design phases
Accessible Trail
Retaining Walls
Guard Rails
Edging/Toe-Rail
Curbs and Steps

NORTH
0 SCALE IN FEET 100

Source: NPS GIS Data

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

FIGURE 6
Proposed Action: Summit Enlargement

Source: NPS GIS Data

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

FIGURE 7

Proposed Action: Schoolhouse Enlargement

The actual capacity of the drop-off area may be smaller and it may be placed anywhere within the maximum footprint; the maximum is analyzed in this environmental assessment/assessment of effect to provide flexibility of size and placement. Installation of this drop-off area would require the removal of up to 0.11 acres of vegetation, including mixed hardwoods.

Curbing would be installed on the east side of Sykes Avenue from the Warren/Wright Avenue intersection north over the summit to the proposed crescent portion of the historic Sykes Avenue alignment to discourage visitors from parking vehicles off of the roads. This curbing would also define the boundary between vehicular and pedestrian zones (described under "Pedestrian Circulation" below), while allowing storm water to run off the road edge. No bus parking would be available at the summit.

Stormwater runoff for all improvements at the summit would be captured by a series of inlets and conveyed to multiple discharge points along the eastern slope, each of which would have an endwall with a riprap apron to prevent erosion.

The Freedom Transit's Gold Line Shuttle Service from May through October could be extended to include a Friday through Sunday loop through the Little Round Top summit. The shuttle would use the same proposed bus drop-off area as tour buses, as described above.

Just north of the summit on the east side of Sykes Avenue, the crescent portion of the historic Sykes Avenue alignment would be paved and four bus parking spaces would be created, as shown on figures 5 and 6. This would require the removal of 0.39 acres of vegetation, including a few mixed hardwoods.

The existing paved parking area with three passenger vehicle spaces on Wright Avenue, south of the summit near the 20th Maine Infantry monument, would remain. The gravel area near the corner of Wright Avenue and South Confederate Avenue where visitors informally park would be removed, revegetated, and closed to parking. The gravel area would be initially closed with a temporary barricade and signage. For long-term closure, the National Park Service would revegetate area by removing the gravel, adding topsoil as needed, and then aerating and seeding the soil.

The existing Round Top Schoolhouse parking area capacity would be increased for both bus and passenger vehicle parking. The initial size of the parking area would be determined during a later design phase, but the maximum capacity of the parking area would be for 50 passenger vehicle spaces (including 2 universally accessible spaces) and 6 bus spaces. A phased approach would be implemented for the parking area expansion. A parking area smaller than the proposed maximum capacity would be initially constructed, and if the parking lot continues to fill to capacity during peak season the parking area could be expanded as needed up to the maximum capacity proposed. See figure 7 for an enlargement of the proposed Round Top Schoolhouse parking area. The maximum size is analyzed in this environmental assessment/assessment of effect to provide flexibility of size and placement for future growth. For construction of the proposed parking area, the existing parking area would be removed, and a new paved parking area would be constructed adjacent to and north of the existing Round Top Schoolhouse where it would be visibly screened from the surrounding area by existing trees. The Carriage House adjacent to the schoolhouse would be demolished for construction of the parking lot. Though the Round Top Schoolhouse is considered a contributing resource to the Gettysburg Battlefield Historic District, the

adjacent Carriage House was determined to be non-contributing and not eligible for listing in the National Register due to its lack of integrity and significance. Vegetation, including grass and hardwood trees would be removed for construction within a 2.50-acre footprint, as shown on figure 8. The entrance and exit for this parking lot would be along Wheatfield Road. Stormwater runoff in this area would be captured by a series of inlets and conveyed to an underground infiltration basin that would be located near the bus parking spaces. This underground stormwater basin would be a pre-manufactured system and sit on a stone base to help promote infiltration. The basin would act as both a volume and rate control facility, and would ultimately discharge to the existing creek to the east. There would be no universally accessible route from this parking area to the summit, but there would be universal access to the proposed restrooms in the schoolhouse, which are described under the pedestrian circulation section below.

Under the proposed action, there would be up to a maximum of 90 passenger vehicle parking spaces (including 5 universally accessible spaces) and 10 bus parking spaces, for a maximum total of up to 100 vehicle spaces.

PEDESTRIAN CIRCULATION

Opportunities for pedestrian circulation would be restructured under the proposed action. Orientation stations would be added at both the summit and at the proposed Round Top Schoolhouse parking area, providing information about the park and trail maps of Little Round Top. Specific locations of these stations would be determined during a later design phase, and may be subject to archeological clearance. These orientation stations could also include downloadable interactive maps visitors can use on a mobile device that would provide a general guided walk through the site, as well as more extended hikes following nearby existing and proposed trails.

At the Round Top Schoolhouse parking area, the existing schoolhouse building would be adaptively reused to house restroom facilities and a possible retail space for visitors. The schoolhouse is considered a contributing resource to the Gettysburg Battlefield Historic District, and the exterior façade is identified as its character-defining feature. While the exterior façade would be maintained, the concrete block addition at the north (rear) elevation would be removed, and a new addition would be constructed in its place. The interior of the schoolhouse would be adaptively reused for full universal accessibility into the restrooms and retail space. Any additional compliance required for the adaptive reuse, rear addition replacement, and/or installation of utilities and mechanical systems for the proposed restrooms and retail space would be completed separately from this environmental assessment/assessment of effect.

Crosswalks would be installed in key locations throughout the site to ensure safe pedestrian road crossing. The most heavily used crosswalks at the summit would include curb extensions to minimize crossing distance and increase driver awareness. A raised surface and unit pavers would be used at the crosswalk at the south end of the angled parking spaces on Sykes Avenue would be used to further increase driver awareness.

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North section could be constructed and revegetated in the future if needed.

WHEATFIELD ROAD

SEDGWICK AVENUE

ONE WAY

SKYES AVENUE

121st New York Infantry Monument

98th Pennsylvania Infantry Mounment

1st Ohio Light Artillery
Battery L Marker

155th Pennsylvania Infantry Marker

146th New York Infantry Monument

Warren Monument

91st Pennsylvania Infantry Marker

5th US Battery

140th New York Infantry Monument

Vincent Boulder

44th New York Infantry Monument

16th Michigan Infantry

ONE WAY

WARREN AVENUE

Vincent Wounded Monument

83th Pennsylvania
Infantry Monument

20th Maine Infantry Monument

38th Pennsylvania Infantry Monument

9th Pennsylvania Reserves

20th Maine Infantry Monument

WRIGHT AVENUE

Pavement Demolition

Land Clearing

Building Demolition

NORTH

0 SCALE IN FEET 200

Source: NPS GIS Data

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

FIGURE 8

Areas of Potential Demolition and Land Clearing

Existing authorized trails throughout the site would be improved for pedestrian circulation, and the surface treatment and width would vary depending on the location, volume of use, and difficulty of terrain. In general, the trails within the core of the summit would be designed for the highest volume of traffic and easy terrain. These trails would be 8 feet wide and paved or treated with another hardened surface. These trails are known as "A" trails and are shown on figures 5 and 6. Specific surface treatment for each trail would be determined during a later design phase. Steel plate toe-rail, up to 12 inches in height, would be installed along the edges of these trails to subtly contain visitors and prevent them from inadvertently straying from the designated trail (figure 6). The A trails would be slightly super elevated to direct stormwater runoff towards the toe-rails, which would be perforated and have several inches of stone on the outside face to disperse runoff. A few other trails on the north slope of the summit would be designated for moderate traffic and terrain. These trails would be 6 feet wide and paved or treated with another hardened surface. These trails are known as "B" trails and are shown on figures 5, 6, and 7. As with the A trails, the specific surface treatments of the B trails would be determined during a later design phase. The B trails would be slightly super elevated with a stone trench on one side to allow runoff to leave the trail surface and disperse. Table 1 below provides a comparison of all proposed trail types.

Unauthorized trails throughout the site would either be permanently closed or converted into authorized trails. The closure of unauthorized trails would be done in the manner described under the no-action alternative. When authorized, most of the trails would be designed for limited traffic volume and difficult terrain. Some would be 4 feet wide and treated with a crushed stone surface that would allow runoff to infiltrate and disperse. These trails are known as "C" trails and are shown on figures 5, 6, and 7. A few trails would be designed for minimal traffic and would be 2 feet 6 inches wide and treated with a crushed stone surface that would allow runoff to infiltrate and disperse. These trails would be known as "D" trails and are shown on figures 5 and 6. As with the A and B trails, the specific surface treatments of the C and D trails would be determined during a later design phase. Table 1 below provides a comparison of all proposed trail types.

TABLE 1. PROPOSED TRAIL TYPES

Type	Width	Surface
A	8 feet	paved or other hardened surface
B	6 feet	paved or other hardened surface
C	4 feet	crushed stone surface
D	2 feet 6 inches	crushed stone surface

Whether closed or authorized, elevations and topography along the existing unauthorized trails would be rehabilitated where the ground has been severely trampled or eroded. A 6-inch layer of topsoil would be added to all disturbed areas, and seeding and matting would be used to prevent further erosion until native species can naturally reestablish these areas.

To address the heavily-trampled vegetation within the vicinity of the 20th Maine Infantry monument the dense understory would be restored, as shown on figure 9. Trampled areas around authorized trails would be closed to pedestrian traffic and the soil would be seeded. This could include similar methods of closing and revegetating unauthorized trails described under the no-action alternative. Species to be seeded would

include the native mixed deciduous trees that currently exist, such as white oak (*Quercus alba*) and hickory (*Carya* sp). The revegetation effort may also include planting native trees with tree guards to ensure growth.

The National Park Service is in the process of completing a cultural landscape report for the Commemorative Era of the park's history. This report will evaluate the removal of the existing asphalt paving on the pedestrian trail following historic Chamberlain Avenue near the 20th Maine Infantry monument. Based on the recommendations of this cultural landscape report, the National Park Service would consider removing the existing trail and revegetating the area in the same manner as the unauthorized trails described under the no-action alternative. See figure 8 for areas that would be cleared under this circumstance. If removed, the historic Telford road bases along this alignment would be protected during removal activities and preserved in place after completion. Alternatively, if the cultural landscape report recommends maintaining the paved trail, it may remain as is or be reduced in size and scale.

A trail designed as a B trail would be created that follows the abandoned historic alignment of the original Sykes Avenue from the proposed Round Top Schoolhouse parking area past the summit to the 20th Maine Infantry monument. As shown on figure 5, the trail would follow Wheatfield Road from the parking area until its intersection with Sykes Avenue and Sedgewick Avenue, where a crosswalk would lead pedestrians to the trail through the woods on the northern slope up to the summit. The trail would then follow along the east side of the proposed crescent portion of the historic Sykes Avenue alignment as a sidewalk, and continue as a sidewalk along the east side of Sykes Avenue until turning southeast to follow the existing route known as Vincent Spur to the former parking area along Wright Avenue.

The former horse trail east of Sykes Avenue would be rehabilitated into a pedestrian trail to provide a route for visitors walking to and from the Round Top Schoolhouse parking area and to increase interpretive opportunities on the east side of Little Round Top. This pedestrian trail would be designed for a limited volume of use, and would be designed as a C trail at 4 feet wide and treated with a crushed stone surface. Visitors could experience Little Round Top by walking from the Round Top Schoolhouse parking area following the proposed trail along the abandoned historic Sykes Avenue alignment, visiting monuments and markers along the way, and then walk back to their vehicles along the rehabilitated horse trail. Interpretive signs could be installed along the rehabilitated trails.

A route easily traversed by visitors with limited mobility would be created from the bus drop-off area at the summit to the proposed gathering area north of the 140th New York monument (described in the "Gathering" section below), as shown on figure 6. This route would extend from the bus drop-off area on the east side of Sykes Avenue, across the proposed crosswalk, to the universally accessible parking spaces on the west side of Sykes Avenue, and along a paved trail to the gathering area. Another trail easily traversed by visitors with limited mobility would be created from the proposed bus parking at the crescent portion of the historic Sykes Avenue alignment to the 155th Pennsylvania Infantry marker.

The licensed battlefield guide and school group reservation system could be changed to work in combination with the intelligent transportation system to limit the number of people on the site at one time. For example, if the intelligent transportation system shows the site is full, it would facilitate a rerouting of buses to another destination prior to heading to Little Round Top. Specific details regarding the intelligent transportation system and changes to the group reservation system would be determined during a later design phase.

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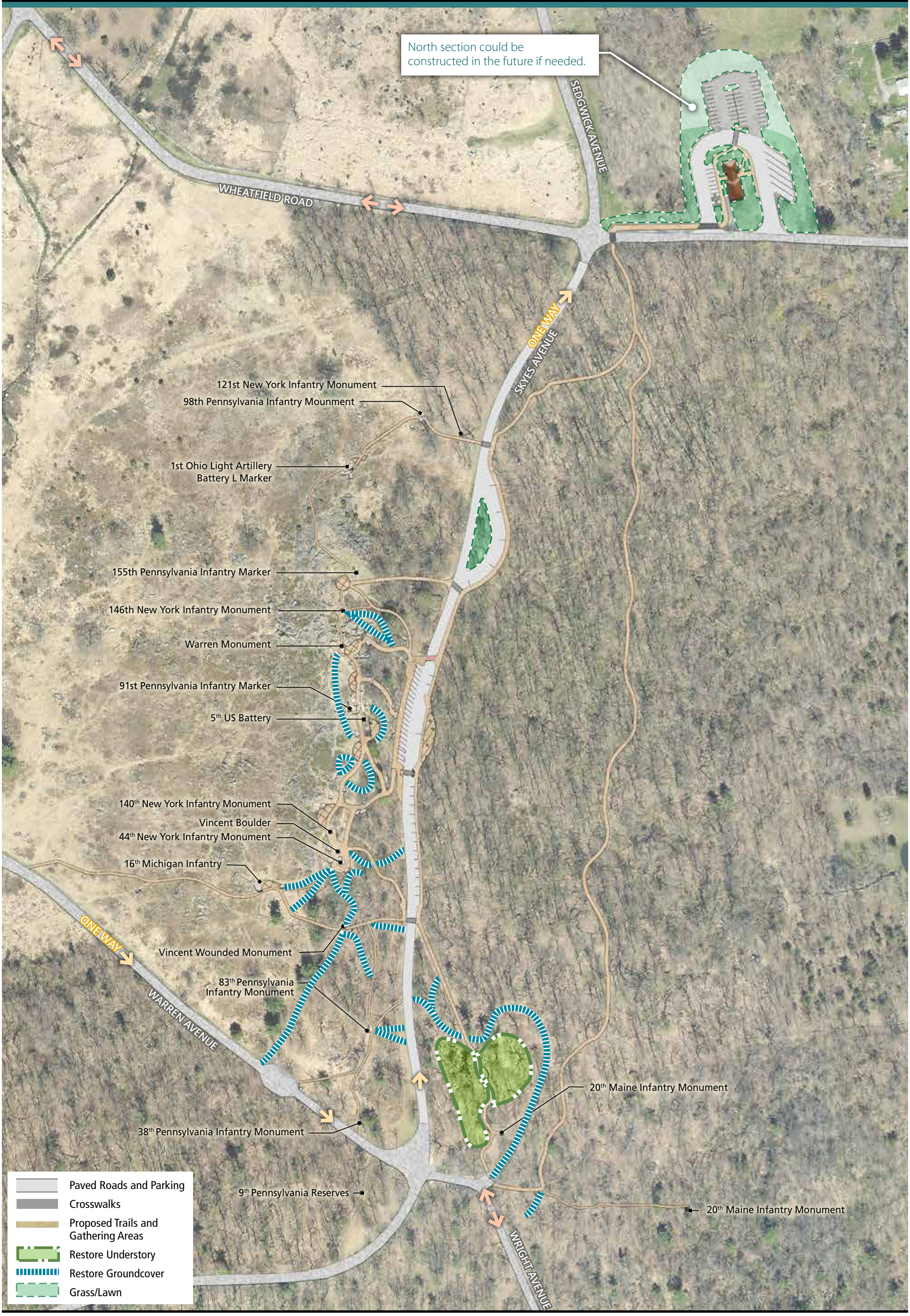

NORTH

0 SCALE IN FEET 200

Source: NPS GIS Data

Little Round Top Rehabilitation
Environmental Assessment/Assessment of Effect

FIGURE 9

Areas of Potential Revegetation

GATHERING

Several changes to gathering areas throughout the Little Round Top summit would be implemented under the proposed action to ease crowding at popular landmarks. Existing paved gathering areas would be rehabilitated and additional formal gathering areas would be created. The proposed layout and location of gathering areas would be designed to minimize changes to significant monuments, terrain, and views, as well as to allow large groups to gather in key locations without blocking access to the trails for other visitors. In general, locations of proposed gathering areas would be in areas where visitors are already gathering, whether they be existing paved areas or areas that have been trampled due to foot traffic, as shown on figures 3 and 4. Proposed gathering areas would be designed either as terraces or decks, as described below, and shown on figures 5 and 6.

Terraces would generally be used in highly visible areas of greatest historic significance and integrity and would follow existing grades as closely as possible with gentle slopes or steps. Materials for the terraces would be specified during future design stages, but would likely be treated with unit pavers on fill. In some locations, short retaining walls and toe slopes may be required. No guard rails would be required for terraces. Paver color and texture of terraces would contrast that of associated steps and walls to improve user awareness of level changes.

Decks would generally be used in areas outside of important viewsheds and in areas of lesser historic significance. Materials for the decks would be specified during further design stages, but may be constructed with steel framing on posts. Decks would be designed to minimize their height above the landscape as well as disturbance to potential archeological resources. The steel posts would be set on rock-anchored piers and would be no more than 8 inches in depth. The deck surface material would be determined during a later design phase, but could include wood, concrete, or metal grating. Guard rails would be installed on elevated decks and walking surfaces that are more than 30 inches above the adjacent grade. The materials for the guard rails would be specified at a later design phase, but the color and finish would be chosen to be as inconspicuous as possible when viewed from a distance.

Short retaining walls of less than 30 inches in height would be created to retain low terraces and trail edges. They would consist of cut stone and be 12 inches thick. These walls would be constructed with minimal excavation, and in some cases, may be constructed on the existing grade. Tall retaining walls of greater than 30 inches in height would be installed in some locations. These walls would consist of a cast-in-place concrete retaining wall with a 4-inch thick cut stone facing and cap. At the 44th New York monument, a tall retaining wall would be required to widen the trail, prevent further erosion, and present barriers to foot traffic on breastworks. These tall walls would also be required in several areas along the proposed sidewalk extending over the steep slope on the east side of Sykes Avenue. Guard rails, as described above, would be installed at the top of the tall retaining walls for visitor safety. Additionally, the existing random rubble stone retaining wall adjacent to the sidewalk on the west side of the Sykes Avenue parking area would be repaired and repointed. The new retaining walls would be of color and texture similar to the native boulders on site, but would be in a uniform and regular coursing to clearly differentiate them from the historic rubble fences and stone breastworks. See figures 6 and 7 for locations of proposed retaining walls.

Table 2 below outlines the details of each proposed gathering areas and figures 5 and 6 show their locations within the project area. Specific sizes and materials for each gathering would be determined during a later design phase. Some gathering areas may be smaller than the maximum proposed area and could be located anywhere within that maximum footprint. The maximum sizes are analyzed in this environmental assessment/assessment of effect to provide flexibility in actual size and placement of each gathering area during construction to accommodate specific conditions within each location, taking into consideration the potential for witness trees, geologic features, other sensitive resources, and capacity demand.

TABLE 2. PROPOSED GATHERING AREAS

Location	Type	Maximum Area (square feet)	Maximum Visitor Capacity (persons)
20th Maine Infantry Monument	Terrace	423	30
16th Michigan Infantry Monument	Terrace	670	48
140th New York Infantry Monument	Terrace	1,135	81
West of the 5th US Artillery Battery D Tablet	Terrace	585	42
East of the 5th US Artillery Battery D Tablet	Deck	743	53
Bus drop-off on east side of Sykes Avenue	Deck	1,990	142
North of the 91st Pennsylvania Infantry Monument	Terrace	573	41
East of the Warren Statue	Terrace	592	42
155th Pennsylvania Infantry Monument	Terrace	806	58
Vincent Wounded Monument	Terrace	237	17
Total		**7,754**	**554**

CONSTRUCTION CLOSURES

During construction activities required under the proposed action, some areas of the site would be closed to visitors. This would include partial site closures of specific trails and access to specific monuments, but would also include larger closures such as the entirety of Sykes Avenue. When Sykes Avenue is closed, passenger vehicles would be rerouted around the summit to Taneytown Road heading north, and then along Wheatfield Road, Crawford Avenue, and Warren Avenue. Parking at the summit would be closed during this time and visitors would be required to park in existing parking areas below the summit or outside of the project area. Bus traffic would likely be prohibited during certain construction phases. Pedestrian access to monuments within the project area may also be closed during construction. Construction could be implemented in phases and closures could be timed to limit disruption of access to the project area. A traffic management plan would be implemented and communicated prior to construction.

MITIGATION MEASURES

To minimize environmental impacts related to the proposed action/NPS preferred alternatives, the National Park Service will implement mitigation measures whenever feasible. Throughout this document, the term “mitigation” is used to refer to measures taken to avoid, minimize, or reduce impacts to the

environment. Although the exact mitigation measures to be implemented depend upon the final design and approval of plans by relevant agencies, the following is a list of actions that could take place:

- State all resource protection measures clearly in the construction specifications and instruct workers to avoid conducting activities beyond the fenced construction zone.
- Fence all areas to keep related disturbances within an NPS-defined and minimal impact area required during construction.
- Designate areas for staging of construction equipment and materials that avoid impacts on natural and cultural resources. The construction limits would be clearly defined, fenced, flagged, or somehow delineated to protect historic structures from inadvertent damage during construction. Under no circumstance would any vehicle be allowed outside the construction limits.
- Educate all employees, contractors, and/or site visitors of relevant rules and regulations that protect the natural and cultural resources within the project area.
- Use the minimum size equipment needed to complete the actions laid out in the alternatives. Hand digging and other minimally intrusive methods may be specified to minimize damage to cultural and natural resources.
- Minimize soil erosion by limiting the time that soil is left exposed and by applying other erosion control measures, such as erosion matting, silt fencing, and sedimentation basins in construction areas.
- Remove invasive plants from construction areas using approaches prescribed in the NPS Integrated Pest Management Program.
- Implement measures to prevent invasive plants from returning to sites where they have been removed, such as ensuring that construction-related equipment arrives at the site free of mud or seed-bearing materials, and certifying that all seeds and straw material are weed-free.
- Rehabilitate areas that are temporarily disturbed during construction with native grasses and other native species as per NPS standards and consistent with the cultural landscape report.
- Evaluate areas proposed for vegetation clearing for witness trees (trees that were present during the historic battle) prior to any construction activities, and avoid impacts to these trees to the extent practicable.
- Record baseline documentation and condition assessment data for all cultural resources located within the project area prior to beginning work. The data will be incorporated into a cyclic monitoring program to document any changes (human or natural) in the condition of the resource. Document and protect features of the 1863 battle and commemorative landscapes.
- Rehabilitate features of the 1863 battlefield, including their historic grade and topography, and rehabilitate monuments, cannons, and other commemorative features to their historic locations and conditions.
- Undertake a Phase II archeological survey during future design phases in those areas with known archeological resources. An archeologist would be present during construction, depending upon the results of the Phase II study and any further design modifications to avoid archeological resources.
- Follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties* for all preservation and rehabilitation efforts to historic structures, to the extent practicable for the majority of project elements.
- Develop an Unanticipated Discovery Plan to mitigate potential adverse impacts in the event that archeological resources are encountered during the actions proposed in the alternatives. If during construction previously unknown archeological resources are discovered, all work in the

immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if significant resources could not be preserved in situ, an appropriate mitigation strategy (e.g. the excavation, recordation, and mapping of cultural remains prior to disturbance, to ensure that important archeological data that otherwise would be lost is recovered and documented) would be developed in consultation with the Pennsylvania Bureau for Historic Preservation (Pennsylvania State Historic Preservation Office) and, as appropriate, associated American Indian tribes.

- Implement traffic control plan, as warranted. Standard measures include strategies to maintain safe and efficient traffic flow during the construction period.
- Implement measures such as temporary area closures to reduce the adverse impacts of construction on visitor safety.
- Implement an education program to ensure that visitors understand the need and benefits of the action.
- Implement standard noise abatement measures during construction. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive uses, the use of the best available noise control techniques wherever feasible, the use of hydraulically or electrically powered impact tools when feasible, and location of temporary noise sources as far from sensitive uses as possible.
- Tree removal and related construction activities would not take place between April 1 and November 15, which encompasses the pupping season of the northern long-eared bat (June 1–July 31), the active season of the Indiana bat (April 1–November 15), and the peak bird breeding season of migratory birds (April 1–August 31), in order to avoid disturbance to potential maternity roosts and nests in the area (USFWS 2011, 2016). During future project phases, if it is determined that clearing or construction is needed during these seasons, the National Park Service would consult with the US Fish and Wildlife Service, and conduct surveys to identify and set up a buffer around any active nests that may occur within the project area.

SUMMARY OF THE ALTERNATIVES

Table 3 below provides a brief summary comparison of the key elements of both the no-action alternative and the proposed action/NPS preferred alternative.

TABLE 3. SUMMARY OF THE ALTERNATIVES

	No-Action Alternative	Proposed Action/NPS Preferred Alternative
Vehicular Circulation and Parking	Vehicles would circulate in the existing counterclockwise pattern: vehicles would approach Little Round Top from South Confederate Avenue and continue north onto Sykes Avenue, then turn west onto Wheatfield Road, then south onto Crawford Avenue, then east onto Warren Avenue. 1 bus drop-off spot would remain at summit. There would be 3 passenger vehicle spaces at Wright Avenue, 36 passenger vehicle spaces at summit, 1 bus parking space at the summit, and 10 passenger vehicle spaces near the Round Top Schoolhouse Total parking capacity: ■ 49 passenger vehicles (including 0 accessible spaces) ■ 1 bus	Vehicles would circulate in the existing counter-clockwise pattern, as under the no-action. An intelligent transportation system would be used to advise vehicles of full parking lots and directions to overflow parking lots, as well as communication with the visitor center. At the summit there would be 20 angled passenger vehicle parking spaces (including 3 universally accessible spaces) on the west side of Sykes Avenue and 17 parallel passenger vehicle parking spaces on the east side. A bus drop-off area would be on the east side of Sykes Avenue at the summit. The crescent portion of the historic Sykes Avenue alignment east of Sykes Avenue and just north of the summit would be paved and have 4 bus parking spaces. Curbing would be installed on east side of Sykes Avenue from the Warren/Wright Avenue intersection north over the hill through the crescent bus parking area. The Freedom Transit's Gold Line Shuttle Service could be extended from May–October to include a Friday–Sunday loop through Little Round Top with a stop at the summit. The Round Top Schoolhouse parking area would be expanded for up to 6 buses and 50 passenger vehicles (including 2 universally accessible spaces). Three paved parking spaces along Wright Avenue would remain. The gravel area would be closed to parking. Maximum total parking capacity: ■ 90 passenger vehicles (including 5 accessible spaces) ■ 10 buses

TABLE 3. SUMMARY OF THE ALTERNATIVES (CONT.)

	No-Action Alternative	Proposed Action/NPS Preferred Alternative
Pedestrian Circulation	Maintain existing asphalt trail surface Close trails that are not a hardened surface	Round Top Schoolhouse parking area: ■ An orientation station with park information would be installed. ■ The Round Top Schoolhouse would be adaptively reused for accessible restrooms and retail space. Summit: ■ Orientation station with map would be added. ■ Unauthorized trails would be closed or authorized to limit access to sensitive areas. ■ Pedestrian trails throughout the site would be rehabilitated with an asphalt surface or a stone surface, depending on the capacity and terrain. ■ Rehabilitate the elevations and topography in areas severely trampled or eroded. Throughout project area: ■ Six crosswalks would be installed to allow safe pedestrian crossings. ■ The closed horse trail would be rehabilitated for pedestrian use with interpretive opportunities. ■ Historic Sykes Avenue would be rehabilitated as a pedestrian trail from the Round Top Schoolhouse parking area, along the summit, and down towards Chamberlain Avenue. ■ Visitors who park at the Round Top Schoolhouse area could experience Little Round Top by walking from the parking area, up to the summit, down to the 20th Maine monument, and then back to their vehicles along the rehabilitated horse trail. ■ Change group reservation system to manage the number of people on the site at one time.
Gathering	Stabilize existing erosion in gathering areas with clean soil fill and grass seed Total gathering capacity: up to 283 people	Gathering areas in the form of terraces and decks would be created throughout the site. Size, treatment, and location would be dependent on expected visitor traffic, existing resources, and historic integrity of the location. Retaining walls would be rehabilitated or created as needed to minimize erosion throughout the site. Maximum total gathering capacity: up to 554 people

ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED

Several alternative elements were identified during the design process and internal and public scoping. Some of these were determined to be unreasonable, or much less desirable than similar options included in the analysis, and were therefore not carried forward for analysis in this environmental assessment. Table 4 below outlines the alternative elements that were considered but dismissed from further analysis and the rationale behind the dismissal.

TABLE 4. ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED

Alternative Element	Reason for Dismissal
Bus circulation would circulate clockwise: north on Sykes Avenue, east on Wheatfield, south on Taneytown Road, and northwest on Wright Avenue back to Sykes Avenue	■ Intersection modification would be required for buses to make right turns, which would result in undesirable changes to historic roads. ■ Change in bus circulation would disrupt the sequential visitor experience of events.
Buses circulation would be reversed: south on Sykes Avenue, west on Warren Avenue, north on Crawford, east on Wheatfield	■ Intersection modification would be required for buses to make right turns, which would result in undesirable changes to historic roads. ■ Change in bus circulation would disrupt the sequential visitor experience of events. ■ Reversing the vehicle circulation direction would require new road signage throughout the area and would be confusing for visitors familiar with the existing patterns. ■ Would increase traffic congestion by requiring buses to complete the circulation loop 2 or 3 times.
Wright Avenue would become one-way with a bus staging area on the right-hand side	■ Wright Avenue is not wide enough to accommodate a bus staging area and widening the historic road would result in adverse impacts because a wider road would be an intrusion of modern materials into the cultural landscape and historic viewsheds, The noise and sight of buses in the vicinity of the 20th Maine Monument would be disruptive to visitors in that area.
Round Top Schoolhouse parking area would be located on the west side of the existing buildings and would be accessed via Sedgwick Avenue.	■ Parking lot would be visible from Trostle Farm, United States Avenue, Munshower Field, and Houck's Ridge, which would be an intrusion of modern materials into the historic viewsheds and setting.
Historic Sykes Avenue alignment would be widened to its Commemorative Era width of 16 feet for a pedestrian trail	■ Would result in visual impacts to the cultural landscape, including loss of vegetation
Gathering area would be located directly at the 20th Maine Infantry Monument	■ The area directly around the monument itself gets too crowded and installing a gathering area around the monument would detract from it. The gathering area should be farther northwest.
The park would implement shuttle-only access to the summit at peak times, limiting access for buses and passenger vehicles	■ The National Park Service determined that this was not a need at this time because other actions proposed in this environmental assessment would address the overcrowding without imposing such restrictions.
During peak hours, full closure of the summit would be implemented as necessary when congestion is particularly heavy.	■ The National Park Service determined that this was not a need at this time because other actions proposed would address the overcrowding without imposing such restrictions.

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3

AFFECTED ENVIRONMENT

VISITOR USE AND EXPERIENCE

In 2016, over 1 million people visited Gettysburg National Military Park. Peak visitation occurs from May through August. July was the busiest month in 2016, with over 165,000 visitors. An average of over 101,000 visitors also came to the park per month during the spring and fall seasons. Visitation is the lowest in the winter months, from December through February, with an average of over 18,000 visitors per month in 2016 (NPS 2017). Visitors come to the park to participate in a wide variety of activities and programs. Park ranger guided walks and programs, battlefield tours with Licensed Battlefield Guides, education programs for school groups, biking, hiking, watching the sunset, and visiting to 'pay respect' at the monuments and memorials are some of the variety of uses of the Little Round Top area by visitors. Self-guided walking and auto tours as well as wayside exhibits are available to promote visitor understanding of the site's significance.

Having played a central role in the Battle of Gettysburg, Little Round Top is one of the most heavily visited sites within the park. This area is generally readily accessible, has a high concentration of memorials, and offers panoramic views of the battlefield (NPS 2012). The historic summit can be seen from Crawford Avenue and other vantage points throughout the park, and indeed can be seen as far away as Mummasburg, Pennsylvania, nearly 7 miles away. At the summit, visitors are able to access several monuments, read interpretive outdoor exhibits, and look out onto the surrounding battlefield.

Visitors begin their experience at Little Round Top by accessing the site via a variety of roadways and authorized pedestrian routes. Roadways provide vehicular and bicycle access to the summit, and authorized trails provide access to specific monuments, features, and vistas on Little Round Top. Most of these circulation routes are well maintained. For visitors taking the park's self-guided auto tour, the approach to Little Round Top is from the southwest, along South Confederate Avenue and up to the summit via Sykes Avenue. Visitors also approach Little Round Top from its base along Crawford Avenue before turning onto Warren Avenue to climb the southern slope to the summit on Sykes Avenue. During the development of the park, the avenues were designed for use by horse drawn carriages. With the advent of the automobile, some of the alignments changed to provide safer traffic patterns. The intersection of Warren, South Confederate, Wright, and Sykes Avenues was altered when the National Park Service realigned Sykes Avenue in 1934 (NPS 2012).

Most parking at Little Round Top is on Sykes Avenue, just behind the summit, while other avenues provide scenic pull-offs or minimal parking. The Sykes Avenue parking area has 24 pull-ins, 1 bus, and 12 parallel parking spaces, with no designated accessible parking spaces. Crawford Avenue and Warren Avenue provide asphalt pull-off areas that allow visitors to stop to take a closer look at monuments without stopping traffic or damaging roadside landscape. A gravel parking area with space for 10 passenger vehicles on the north side of Wheatfield Road allows visitors to park and access Little Round Top by foot from the north. From the south, a paved parking area along Wright Avenue near the 20th Maine Infantry monument has three parking spaces. These parking areas are each approximately 0.25 mile away from the summit of Little Round Top. A gravel area that was once a foundation for temporary restrooms that have since been removed is located near the intersection of South Confederate Avenue and Wright Avenue. Although this gravel area is not intended to be a parking area, visitors use it to park their passenger vehicles to access monuments and markers in the area.

A traffic study completed in the park found counts of parked vehicles at Little Round Top to be the highest Friday through Sunday. During busy periods, cars and buses parked parallel on the sides of Sykes Avenue create a conflict between pedestrians and vehicles by blocking the line of sight for both drivers and pedestrians. The parked vehicles on the side of Sykes Avenue also damage vegetation and create soil erosion from parking partly off the edge of the pavement, which may diminish visitor experience for visitors who notice such degradation and value the integrity of the park's natural resources. Noise, congestion, and exhaust from idling vehicles also impair the visitor experience in the area by detracting from an otherwise contemplative atmosphere.

From the Sykes Avenue parking area, paved trails provide access to certain monuments and vistas in the area. Visitors may step to the side of paved trails in order to walk abreast of their companions, or to allow others to pass. Not all monuments in the project area have access provided by paved trails, which has led to the creation of unauthorized trails. Some unauthorized trails traverse (and degrade) culturally-sensitive areas and others lead nowhere. Some of these trails, along with authorized trails, are subject to erosion and uneven footing. The park's general management plan recommended that the National Park Service "remove non-historic trails and restore the landscape," and "prohibit new, non-historic systems that do not meet the park's mission and purpose" (NPS 1999).

SOILS

The most common soil in the project area is the Neshaminy series (approximately 58 percent), which contains deep, well-drained, very stony, channery silt loams. The soils that occur over the diabase intrusions tend to be very stony and mineral-rich, and often support diverse herbaceous flora. There is a moderate to severe risk of erosion for these types of soils within the project area (NRCS 2016). The Mount Lucas series is the other common soil in the project area, making up approximately 17 percent of soils. It is moderately deep to deep, somewhat poorly drained to well-drained channery silt loams that developed in material weathered from diabase. Stones and boulders can be common on the surface. These soils have a moderate risk of erosion within the project area (NRCS 2016). Also present in the project area is Watchung silt loam (approximately 6 percent). This typically occurs in drainages over diabase

intrusions, deep, poorly-drained silty clay loams with occasional large diabase boulders (Speir 1967). These soils have a slight to severe risk of erosion within the project area (NRCS 2016).

Currently, inadequate parking at the summit of Little Round Top has led some visitors to park along the edges of Sykes Avenue. Improper parking has led to soil compaction and erosion along the roadway where vehicles have partially driven off the pavement. Soil compaction and erosion have also occurred on the summit of Little Round Top where visitors have walked off paved authorized trails in order to accommodate large crowds, or to access monuments or vistas where authorized trails do not lead.

Erosion generally occurs around the most heavily used areas of Little Round Top, particularly in the core interpretive area of the summit and along Sykes Avenue. In these areas erosion is fairly widespread about 1 to 2 feet on either side of paved areas. At the summit, erosion manifests as shallow gullies a few inches in depth on average exposing the edge of pavement and, where monuments are nearby, exposing the base of monuments. In addition to erosion caused by foot and vehicle traffic off of paved areas, erosion is also frequently caused by sheet flow of storm water during rain events. Overall, approximately 0.89 acres of soil are eroded to some extent in the project area.

In addition to being eroded, areas where visitors travel off pavement (e.g. along social trails and adjacent to the gathering areas) are also compacted to some extent. Soils under existing pavement are also compacted due to previous construction and long-term vehicle and pedestrian use. Overall, approximately 1.74 acres of soil within the project area are compacted.

VEGETATION

Dry oak-mixed hardwood forest is the most abundant forest association in the project area. A recent report published by biologists at the NPS Mid-Atlantic Monitoring Network reported that the park overall has a high tree recruitment level in oak-hickory forests, indicating healthy tree growth (NPS 2013). A mature forest with a healthy understory is located on the east side of the Little Round Top summit between Sykes Avenue and Taneytown Road. However, the areas along Sykes Avenue and around Vincent Spur are characterized by a disturbed forest with minimal understory or shrub layer, which is a result of heavy foot traffic and routine brush removal. Overall, approximately 0.89 acres of the project area includes vegetation that is either trampled or non-existent due to heavy foot traffic.

As with erosion, vegetation trampling generally occurs in the most heavily used areas of the summit because many visitors walk off of established trails and park along paved roadways. In some areas, vegetation is non-existent within a few feet of heavily used areas due to trampling. Vegetation has also been trampled regularly along what has become unauthorized trails throughout the site. Approximately 0.25 acres of mixed hardwood forest in the vicinity of the 20th Maine Infantry monument has very little understory due to frequent trampling and high foot traffic volume in the area off of the paved trails. This lack of understory means that in this area the forest primarily consists of mature trees and lacks sufficient new stem growth to replace older trees as they naturally die. Thus, this area has a reduced ability for successful forest regeneration, which is an important function for the overall health and sustainability of hardwood forests (Loftis 2004).

The same NPS Mid-Atlantic Monitoring Network study mentioned above concluded that the park had an above average percent cover of invasive plant species with the most common species being Japanese honeysuckle (*Lonicera japonica*) and Japanese stiltgrass (*Microstegium vimineum*) (NPS 2013). NPS staff also work to combat several other invasive plant species such as multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), ailanthus (*Alianthus altissima*), and mile-a-minute (*Persicaria perfoliata*).

One of the park's purposes is to preserve the significant topographical, natural, and cultural features that were significant to the outcome of the battle (NPS 1999). The primary goals of natural resource planning at Gettysburg are to (1) restore and perpetuate the battlefield as it appeared at the time of the Battle of Gettysburg in July 1863 and to (2) preserve resident fauna and flora that are compatible with the goal of historic accuracy. With these goals, park personnel conduct floral inventories, monitor seedling recruitment, and map vegetative cover types. Vegetation management is also a critical part of the park's landscape rehabilitation plan.

CULTURAL LANDSCAPES

The National Register of Historic Places nomination for the Gettysburg National Military Park defines the period of significance as 1863-1938, commencing with the Battle of Gettysburg and ending with the last official Blue and Gray soldiers' reunion held at the park, on the battle's 75th anniversary. During the period of significance's Commemorative Era (1864-1938), the War Department was tasked with transforming the battlefield into a National Military Park, and the resulting park landscape reflects that transformation. It is a landscape that reflects the powerful emotional response of the survivors of the battle as a tangible memorial to themselves and their fallen comrades. Many early tourists came to the site to witness the scene of the great Union victory. Development within the park that is associated with the Civilian Conservation Corps and the National Park Service has been determined to be non-contributing, whether or not it occurs within the period of significance (NPS 2012).

Commemorative Era monumentation follows the Union battle line at the summit and on the slopes of Little Round Top. The route of the Commemorative Era Sykes Avenue atop the hill has been incorporated in places into an NPS trail system. The National Park Service relocated Sykes Avenue to the immediate eastern edge of the hill's summit in 1935–1936 and somewhat changed grade through cutting and filling. The Mission 66 NPS trail system, composed of asphalt, crossed the summit of the hill. However, this trail's original alignment is not clear and the existing deteriorated asphalt lacks integrity. Informal and eroded trail systems network the hill. Except for the eroded damage on the summit caused by high visitor use, Little Round Top retains an extraordinary amount of integrity to its historic era.

Little Round Top is a complex historical site, with a wide variety of natural and man-made features associated with the 1863 battle and the Commemorative Era. Therefore, the cultural landscape report organizes the project area into ten character areas, with distinct physical and visual attributes. The ten character areas are retained in this document as an organizational tool for the discussions of cultural landscapes and historic structures below.

OPEN VEHICULAR CORRIDOR

The north, west, and much of the south boundaries of the project area are characterized by the 18-foot-wide paved roadways of Wheatfield Road, which was laid out before the Civil War, and the Commemorative Era Crawford and Warren Avenues. In contrast to the steep terrain and rocky outcrops visible on the west slope of Little Round Top, the roadways in this character area have relatively flat topography, gentle curves, and are surrounded by low vegetation. The open landscape and wider views of these corridors are also in stark contrast to the densely wooded roadways of the east side of the project area.

Circulation includes the wide roadways, which have their original Telford road bases. NPS improvements include asphalt pull-offs on the west side of Crawford Avenue and both sides of Warren Avenue, and a gravel parking area located on the northeast side of the intersection of Wheatfield Road and Sykes Avenue. Mown grass edges on both sides of the road mark the limits of the park avenues. Small, cast iron tablets mark the names of the park avenues in the project area, designed and installed during the Commemorative Era, which have been supplemented more recently with NPS wayfinding signage.

The cultural landscape of the open vehicular corridor retains a high degree of integrity, as the roadway alignments and the open character have changed little over time. An exception is the former Rosensteel property at the northeast corner of Wheatfield Road and Sedgwick Avenue. During the NPS era, numerous buildings were removed including residential and commercial development.

FOREST LINED ROADWAYS

This character area is defined by the approach roads to the summit of Little Round Top, namely Sykes Avenue and Wright Avenue, which intersect in the southeast area of the project area. These roadways have curved routes and are lined by dense forest, limiting lines of sight and providing only intermittent distant views to the west.

Wright Avenue retains its general original alignment, but Sykes Avenue was realigned and straightened during the NPS era. Remnants of the original 1897 Sykes Avenue alignment, with its Telford road base, are extant on both sides of Sykes Avenue at the summit. Like other roadways in the project area, the roadways in this character area have Commemorative Era square-topped culverts and cast iron signage, as well as more modern grass swales, asphalt gutters, and NPS era signage. A narrow parking area has been added to the west side of Sykes Avenue at the summit, with concrete wheel stops, granite curbs, bicycle rack, and an asphalt sidewalk. Asphalt trails and stone steps guide visitors between the summit's features, and unauthorized trails have developed from the parking area on Sykes Avenue.

This character area has a low degree of integrity, due to the realignment of Sykes Avenue and the NPS era alterations to the roadways in order to facilitate parking for visitors. A portion of the original Sykes Avenue alignment is extant, but is not formally utilized or interpreted.

VINCENT SPUR

Vincent Spur is a rocky saddle between Little Round Top and Big Round Top, located northeast of the intersection of Sykes Avenue and Wright Avenue. This area marks the location of the 20th Maine Infantry during the battle, and is characterized by dense forests, and steep, rocky slopes that isolate the area from the rest of the project area. A series of authorized and unauthorized trails are connected by the Commemorative Era Chamberlain Avenue alignment. In 2013, Chamberlain Avenue was paved as a 10-foot trail for pedestrian access to the 20th Maine Infantry monument. Brush piles have been placed as a deterrent at the entrance of unauthorized trails. There is a small paved parking area at the south end of Chamberlain Avenue, at Wright Avenue, with concrete wheel stops to prevent vehicles from entering the Chamberlain Avenue roadbed.

The integrity of some of this character area has been retained, namely in the place, alignment, Telford road base, and linearity of Chamberlain Avenue as well as the terrain east and south of this alignment. Because the existing surface treatment of the avenue is a rehabilitation of the original avenue, the paved surface lacks integrity. The growing popularity of this area during the past few decades has resulted in the compaction and erosion of the terrain, as well as trampling and clearing of understory vegetation around the monuments due to increased foot traffic, all of which results in a diminished integrity of setting and feeling.

WARREN AVENUE MONUMENTS

This small, flat clearing at the base of the south slope of Little Round Top is located northwest of the intersection of Warren Avenue and Sykes Avenue. Both authorized and unauthorized trails lead to the monuments from asphalt pull-offs on the roadway. A moderate degree of integrity has been maintained.

16TH MICHIGAN

Midway up the south slope of Little Round Top is a small promontory used by the 16th Michigan Regiment and a portion of the 44th New York Regiment during the battle. This area is accessed by pedestrians via unauthorized trails leading down from the summit and up the west slope from Warren Avenue. The relatively difficult terrain protects this area from the degree of pedestrian traffic seen in other parts of the project area. This area retains a high degree of integrity.

NORTH SLOPE MONUMENTS

This concentration of monuments is located on the north slope of Little Round Top, separated from the Core Interpretive Area by a large rock outcrop. The steep rocky slopes, intermediary plateaus, and distant panoramic views to the west that characterized this area during the battle are extant. Stone breastworks that were significant battle-related features are also extant in this area. A series of unpaved authorized trails connects the monuments concentrated in this area, including an unauthorized trail leading north from the Core Interpretive Area.

Although the current route of Sykes Avenue is not original, the portion of this area west of the roadway retains a higher degree of historic integrity. The old Sykes Avenue alignment is still discernible, and the natural features, landscape, and views are generally unchanged from the Battle Era. Foot traffic, and the resulting soil compaction and erosion, has somewhat diminished the integrity of setting and feeling in the vicinity of the monuments.

CORE INTERPRETIVE AREA

The exposed summit of Little Round Top off Sykes Avenue is the central feature of this historic site, consisting of the highest concentration of monuments, interpretive elements, and iconic views. It is, therefore, the most heavily visited of the character areas. The exposed west slope provides scenic views over the surrounding landscape, including towards Devil's Den, Houck's Ridge, and Big Round Top, helping visitors understand the strategic advantage of the Union soldiers' positions. The high vantage point also provides visitors with a view of Cemetery Ridge to the north. To the east of the summit, the landscape is dominated by dense forest.

This area contains small segments of the former Sykes Avenue alignment. A number of paved trails have been laid out, connecting monuments, interpretive signage and exhibits, gathering areas, and the parking area on Sykes Avenue. Cast iron signage was installed during the Commemorative Era, which has been supplemented during the NPS operation of the park by additional signage and exhibits.

As discussed in the cultural landscape report, the Commemorative Era development of this area into the Little Round Top's interpretive center was detrimental to the preservation of the area's Battle Era character (NPS 2012). However, the area has been maintained much as it was during the Commemorative Era, with the exception of the realignment of Sykes Avenue. Therefore, the core interpretive area retains a relatively high degree of integrity due to the preservation of monuments, retention of pathway alignments, and management of invasive vegetation. Today, the high volume of visitors exceeds the capacity of the asphalt-paved trails, resulting in heavy compaction and erosion in areas outside of the paved areas, which contributes to the degradation of many of the natural features that define the character.

DENSE FOREST

The steep, densely wooded east slope of Little Round Top is located east of Sykes Avenue, separating the summit from the open agricultural fields to the east along Taneytown Road. It is largely undeveloped, with the exception of a sizable portion of the former Sykes Avenue trace, a portion of which leads from Wheatfield Road south to an unpaved horse trail that is currently closed to horse use. Very little development occurred in this area during the Commemorative Era, and its densely forested character is in keeping with Battle Era descriptions, resulting in a very high degree of integrity for this character area. Extant features from the Battle Era are the steep, rocky slopes, prominent rock outcrops, the closed forest, and woodlot.

ROCKY SLOPE

The west slope of Little Round Top is steep and strewn with boulders, putting the approaching Confederate troops at a disadvantage as they ascended the difficult terrain. Meanwhile, the open slope gave Union troops on and near the summit a good view of Devil's Den and north along Wheatfield Road. The open character of the west slope is key to understanding the strategic positions of each army. It is maintained to appear much as it did during the battle, with low, dense vegetation interspersed with small tree stands, although the current vegetation is slightly more mature than would have been present in 1863. Invasive species are present but are managed to maintain the open landscape. The loose stones and rocky terrain discourage a lot of foot traffic. In the 1890s, the Gettysburg Electric Railroad was constructed in this area and, though it was removed in 1917, the trolley bed is still visible and is considered a Commemorative Era contributing resource within this area. This character area retains a high degree of integrity.

PLUM RUN CORRIDOR

Plum Run forms a natural barrier between the rocky western slope of Little Round Top and Crawford Avenue to the west. This flowing stream is characterized by wet meadows and dense riparian vegetation, and recent planting efforts along the banks have increased diversity while preventing erosion. The meadow and riparian vegetation of Plum Run are similar to that found during the battle, and the historic integrity of the Plum Run area is high.

HISTORIC STRUCTURES

The historic structures discussion utilizes the same ten character areas as the cultural landscapes discussion, as defined by the cultural landscape report.

One common element shared by all of the character areas are the several dozen monuments and memorials constructed during the Commemorative Era. Several of these monuments were placed by the units that served in the battle, commemorating the fallen and marking the locations of troop lines. These stone monuments range from large, elaborate architectural monuments to small markers noting the right and left flank extremes of military units. There are also bronze tablets, installed by the War Department as directed by the enabling legislation to mark the lines of battle and assure the story of the evolution of the battle was told in a permanent way. All of the monuments are National Register contributing resources, dating to the Commemorative Era.

OPEN VEHICULAR CORRIDOR

Structures in this character area include 14 monuments and markers, commemorating the battle line locations of infantry units and divisions from several states. Additionally, four Commemorative Era structures exist, including the park avenues, bridges, and avenue signage. Fieldstone walls along the roadways have mostly been reconstructed, but accurately depict historic property boundaries from 1863.

A stretch of the fieldstone wall on Wheatfield Road is topped by a split rail fence, indicating the likely enclosure of a pasture. The 1889 Round Top Schoolhouse and the adjacent Carriage House are both located on the northeast side of the Wheatfield Road and Sykes Avenue intersection. These are accompanied by a modern wood trellis, enclosing two portable toilets. The Round Top Schoolhouse is considered to be a contributing resource to the Gettysburg Battlefield Historic District, and its front (southern) façade is considered to be a character-defining feature. The Carriage House, however, is not considered a contributing resource to the historic district nor eligible for listing in the National Register due to its lack of integrity and significance.

FOREST LINED ROADWAYS

Historic structures in this area include 10 Commemorative Era structures, including monuments and markers, park avenues, and signage, as well as reconstructed fieldstone walls. There are also several stone breastworks, which are low fieldstone barricades constructed after the second day of battle and maintained through the occupation by Union troops. The breastworks throughout the project area have mostly been rebuilt, sometimes several times, but like the fieldstone walls largely reflect their original battlefield locations. A stone and mortar retaining wall was constructed at the summit of Little Round Top during the NPS era, in order to extend the amount of flat space available for visitors and groups. Other NPS-era structures in this area include stacked rail barricades to keep visitors on the paved trails, and a 1980s wooden gate at the north end of Sykes Avenue, a relic of the period when the tour route carried Sykes Avenue from north to south.

VINCENT SPUR

Historic structures in this character area include a fieldstone wall, stone breastworks, fence lines, and seven Commemorative Era resources, including park avenues, signage, and monuments and markers telling the story of the 20th Maine Infantry.

WARREN AVENUE MONUMENTS

Stone breastworks define the boundary of this area, which has seven Commemorative Era monuments and markers that extend from Warren Avenue up the slope that eventually leads to the summit and the Core Interpretive Area. Two of the monument tablets are lost, though the bases remain. Warren Avenue itself is considered an important historic structure from the Commemorative Era within this character area. This area is also the location of the David Weikert Well, which served the non-extant David Weikert souvenir stand after the war. The well is covered by a concrete pad.

16TH MICHIGAN

This area has stone breastworks and three Commemorative Era monuments and markers identifying the positions of the 16th Michigan Infantry.

NORTH SLOPE MONUMENTS

This character area has stone breastworks and 12 Commemorative Era monuments and markers honoring the 146th New York Infantry, the 155th Pennsylvania Infantry, Battery L 1st Ohio, the 98th Pennsylvania Infantry, and the 121st New York Infantry. Additionally, the historic alignment trace and Telford road base of the original Sykes Avenue are extant in this character area.

CORE INTERPRETIVE AREA

Fifteen Commemorative Era monuments are clustered in this area, accompanied by Commemorative Era signage and Battle Era stone breastworks. This area has the highest concentration of monuments of all the character areas. A portion of one of the authorized trails has concrete post footings left from a former short-term post-and-chain fence installed during the NPS era. Some of the breastworks and fieldstone property walls, depicted in accounts of the battle, are not extant, although their historic locations are known. An early tablet to the 18th Massachusetts Infantry is gone, although the base is extant.

DENSE FOREST

The only recorded historic structure in this character area is a fieldstone wall that marks the edge of the NPS property.

ROCKY SLOPE

Stone breastworks are a primary feature of this area, where Confederate troops charged the summit of Little Round Top. There is one Commemorative Era monument honoring the Michigan Sharpshooters.

PLUM RUN CORRIDOR

Historic structures in this character area include monuments and markers identifying the location of the 40th New York Infantry just north of Warren Avenue, a monument to General Crawford, as well as historic bridges and culverts.

INTEGRITY

The integrity of the historic structures of the project area retain integrity of location, setting, association, and feeling, while the monuments in particular also retain integrity of design, materials, and workmanship. The large-scale landscape features that defined the battle and the subsequent Commemorative Era have been maintained, retaining the original setting for the project area's structures. The monuments are generally well-preserved and well-maintained, having been made of sturdy bronze and stone materials.

The stone breastworks and fieldstone property walls have been reconstructed since the battle but reflect their original positions, retaining integrity of location. Although materially intact due to reconstruction, some of the stone breastworks are overgrown with vegetation and some have dislodged stones due to visitors climbing over them while following unauthorized trails that occasionally cut through the structures. The National Park Service does not currently have a complete inventory of the existing condition of all stone breastworks, but a thorough study of these structures is planned for the future.

In addition, the park avenues have been maintained and are still in use for the original purpose for which they were designed. They continue to provide access for park visitors to help them understand the story and evolution of the battle. The Telford road bases are also intact along the extant avenues and their good condition testifies to the quality and durability of this construction method.

ARCHEOLOGICAL RESOURCES

A very small portion of the area was surveyed for archeological resources prior to recent controlled burning to maintain the landscape. However, a comprehensive archeological survey of the project area has not yet been completed, and therefore, the National Park Service does not have a full understanding of existing archeological resources at Little Round Top. The cultural landscape report identifies two major historical time periods that are most likely to have archeological deposits within the project area, including the pre-Colonial period and the Battle of Gettysburg period. An analysis of the topography of 52 pre-Colonial archeological sites in Adams County indicated that the landscape settings most associated with recorded archeological sites included stream benches, lower hill slopes, floodplains, middle slopes and terraces that were located close to flowing water. Although characteristics such as close proximity to water and relatively level land are not common throughout the project area, the area adjacent to Plum Run does feature a floodplain and the lower slopes of Little Round Top, and the area was identified as having moderate archeological sensitivity (NPS 2012).

The Battle of Gettysburg was a pivotal event in the Civil War; therefore, artifacts and archeological deposits associated with the battle would be considered particularly significant. The cultural landscape report notes that many known artifacts associated with the battle have been removed from the site, either by the military or by relic hunters. Temporary burials of fallen soldiers occurred after the battle on the southeast and northwest slopes of Little Round Top, but these were reinterred at the Gettysburg National Cemetery, located further north in Gettysburg National Military Park. In addition, an archeological investigation conducted in the 1990s on the east side of the Sykes Avenue parking lot did not locate any intact deposits. However, given the importance of the Battle of Gettysburg, the cultural landscape report concludes that the entire project area should be considered archeologically sensitive for the time period associated with the battle (NPS 2012). Among the areas with the most Battle Era archeological potential are Vincent Spur, signal rock at the United States Signal Corps monument at the summit of Little Round Top, and any identified cannon or interment locations associated with the battle (NPS 2012). Because the complete archeological record is not known, archeological surveys and testing would be required to determine the existence of any unknown and intact archeological resources within these areas.

Some Commemorative Era archeological resources exist within the project area in the form of historic avenue alignments and Telford road bases. Though now unused, remnants of the Commemorative Era alignment of Sykes Avenue are still apparent today, including remains of the Telford road base and traces that are used as unauthorized pedestrian trails to reach the 155th Pennsylvania Infantry monument. Archeological surveys and testing would be required on the north slope and in the wooded area east of the summit to verify the location and extant features of the historic Sykes Avenue alignment.

As mentioned in the "Soils" section above, visitors frequently walk off of the authorized trails and park off of paved roadways, which has led to the eroded condition of the soils in the project area, particularly at the summit. Because the complete archeological record is not known at this time, the existence and condition of archeological resources within the eroded soils is unknown. The National Park Service plans on completing further archeological surveys and testing in the future. Until the results of further surveys and testing is known, the National Park Service considers the entire project area to be archeologically sensitive, as recommended in the cultural landscape report (NPS 2012).

4

ENVIRONMENTAL CONSEQUENCES

This chapter analyzes both beneficial and adverse impacts that would result from implementing either of the alternatives considered in this environmental assessment/assessment of effect. A summary of the environmental consequences for both alternatives is provided in table 5, which can be found at the end of this chapter. The resource topics presented in this chapter and the organization of the topics correspond to the resource discussions contained in "Chapter 3: Affected Environment."

GENERAL METHODOLOGY FOR ANALYZING IMPACTS

In accordance with CEQ regulations, direct, indirect, and cumulative impacts are described under each impact topic (40 CFR 1502.16), and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts. The specific methods used to assess impacts for each resource may vary; therefore, these methodologies are described under each impact topic. For all resource topics, the area evaluated for impacts is the area delineated as the project area.

An assessment of effect under NHPA Section 106 was completed in conjunction with this NEPA document and is included at the end of this chapter. This document uses the term "impact" to conform to standard NEPA analysis terminology, and the term "effect" only in the assessment of effect section at the end of this chapter to conform to standard NHPA Section 106 terminology.

It should be noted that the NEPA analysis within this chapter does not constitute a finding of effects as defined by NHPA Section 106. An adverse impact in a NEPA analysis does not necessarily equate to an adverse effect under Section 106. An assessment of effect is presented at the end of this chapter and will assess the potential for adverse effects under the National Historic Preservation Act.

CUMULATIVE IMPACT ANALYSIS METHODOLOGY

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7).

Cumulative impacts were determined for each impact topic by combining the impacts of the alternative being analyzed and other past, present, and reasonably foreseeable actions that would also result in beneficial or adverse impacts. Because some of these actions are in the early planning stages, the evaluation of the cumulative impact is based on a general description of the projects. These actions were identified through the internal and external project scoping processes and are summarized below.

Past, Present, and Reasonably Foreseeable Actions

Trail Improvements. The National Park Service is in the process of developing a comprehensive trails plan for the park. The *Comprehensive Trails Plan* would include strategies and individual projects to enhance and expand the trail network so visitors can experience more of the battlefield without vehicles. The plan would consider multimodal uses of commemorative park avenues to improve safety and accessibility, establish additional bicycle routes, expand opportunities for visitor access, evaluate hiker/bicyclist shuttle opportunities, and assess the potential expansion of equestrian trails. New trails would follow historic alignments such as avenues, lanes, railways (where appropriate), tree lines and fence lines in place at the time of the Battle of Gettysburg. The development of this plan and any resulting action would impact visitors use and experience as it relates to recreation opportunities, interpretive opportunities, and site access and circulation. Additionally, in 2013, paved pedestrian trails were added along Taneytown Road and Chamberlain Avenue, as well as additional trails outside of the project area, all of which improve connectivity throughout the project area and the park as a whole. These trail improvements have had and would have impacts on visitor use and experience, soils, vegetation, cultural landscapes, historic structures, and archeological resources.

Vegetation Management. Vegetation management is an ongoing management prescription at the park. Adjacent to the project area the park has removed 8 acres of woody vegetation at Munshower Hill and 6 acres along Plum Run east of Devil's Den, in order to maintain the historic appearance of the landscape. In addition, the park conducted prescribed fire on 36 acres at Munshower Hill and 7.5 acres at the Triangular Field, in accordance with the park's fire management plan (NPS 2014). Prescribed fire was also conducted on the western slope of Little Round Top in April 2017. The face of Little Round Top is mown every two years and treated with herbicide to reduce the encroachment of non-native invasive species and to reduce the probability of woody vegetation populating the hillside, which would ultimately impact the character of the cultural landscape. Vegetation management actions have had and would have impacts on visitor use and experience, vegetation, cultural landscapes, historic structures, and archeological resources.

Agriculture Permit Program. Of the park's 2,500 acres of row crops and pasture approximately one-third can be viewed from the summit of Little Round Top. These acres, under Special Use Permits, are held and managed by four local farmers within the park's Agricultural Permit Program. Though distant from the project area itself, these farms assist in maintaining the historic appearance of the larger

landscape where farms were located beyond the wooded battlefield of Little Round Top. The agriculture permit program has had and would have impacts on cultural landscapes.

Rehabilitation of Cultural Landscapes and Historic Structures. The 1999 General Management Plan prompted ongoing efforts to rehabilitate the park's landscape to better reflect the 1863 battle and commemoration conditions. The National Park Service has undertaken efforts to rehabilitate cultural landscape features such as fences, orchards, circulation patterns, and vegetative cover to reflect the 1863 battle. These improvements have had impacts on cultural landscapes, historic structures, and visitor use and experience.

Improvements to Interpretation. The National Park Service is currently in the planning stages of an interpretive plan for Little Round Top, which would work to complement the Little Round Top rehabilitation efforts described in this environmental assessment/assessment of effect. This plan would identify interpretive themes, subthemes, and stories to be conveyed to visitors. This interpretive plan would also include interpretive strategies, interpretive circulation patterns, and a hierarchy of experiences, all of which would aim to achieve a set of visitor experience objectives. New interpretive elements and exhibits to be installed within the Little Round Top area may be included as part of this interpretive plan.

VISITOR USE AND EXPERIENCE

METHODOLOGY

Potential impacts on visitor use and experience are assessed based on changes to the way people use and circulate through the project area, as well as how the alternatives would alter visitors' experiences. A description of the current conditions of visitor use and experience is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against these conditions to determine the changes that would occur under each alternative.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Under the no-action alternative, adverse impacts on visitor experience would continue and would likely increase due to the trend of increased annual visitation. Annual visitation at the park has consistently increased over the past several years and that trend is expected to continue. Because of this, these adverse impacts related to crowding and congestion are expected to increase over time. As visitation increases, parking would become more limited and trails and gathering areas would become more crowded. Exhaust fumes and noise from idling buses loading and unloading passengers would continue to detract from the contemplative visitor experience of the summit. The noise may continue to make it difficult for visitors to hear a guide's presentation or interfere with a visitor trying to quietly reflect on the events that took place on and around Little Round Top. Crowded parking areas would persist and continue to adversely impact the visitor experience due to limited parking and potential conflicts between passenger vehicles, buses, bicycles, and pedestrians using the same area. Because visitation is expected to continue to increase annually, visitors would likely have increasing difficulty finding available parking spaces during peak

season and would likely spend more time navigating through congested roads whether in a motor vehicle, on foot, or on a bicycle. Visitors would continue to have uncertainty about whether or not spaces are available at the summit when it is not visible from below and would increasingly park informally along roadsides because there would be more demand for the currently limited parking. Overcrowding at the summit would continue to detract from the opportunity for visitors to quietly reflect on or learn about the events that took place on or within view of Little Round Top. Closing unauthorized trails may have a temporary adverse impact on some returning visitors who would have to adjust to no longer using those unauthorized trails. Because the authorized trails would become increasingly more crowded, a limited number of visitors may seek less crowded pathways and create new unauthorized trails.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on visitor use and experience include the trail improvements, vegetation management, the rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in an improved and expanded visitor experience at Little Round Top. For instance, the ongoing vegetation management throughout the park and project area maintains some of the historic appearance of the landscape, allowing visitor to experience a more historically-accurate site. The in-progress comprehensive trail plan and creation of new formalized trails has provided and would provide additional interpretive opportunities and connectivity between sites within the park. The agriculture permit program results in beneficial impacts on visitor use and experience because the presence of farms within the larger landscape around the project area maintains the historic appearance of the viewshed from the summit—where farms historically existed beyond the wooded Little Round Top—which allows visitors to experience a more accurate site. Previous efforts of the National Park Service have restored and improved the historic structures within the project area, providing increased interpretive opportunities for visitors to experience the historic and cultural resources. The in-progress interpretive plan for Little Round Top would provide a more cohesive, informative, and accessible interpretive program for all visitors. This plan would guide future interpretive content and media to improve opportunities for visitor understanding of the historic events that occurred at the site, as well as to gain insight into how these historic events were remembered and memorialized.

The adverse impacts of the no-action alternative would contribute to the degradation of the visitor experience at Little Round Top. When considered with the actions identified above, the adverse impacts of the no-action alternative would slightly detract from the beneficial impacts of the other actions that would improve the visitor experience. As a result, the overall cumulative impact of the no-action alternative would be adverse due to overcrowding at the summit.

Conclusion

The no-action alternative would continue to result in adverse impacts on aspects of visitor use and experience. Visitors would continue to have opportunities to immerse themselves in the activities related to the events of Little Round Top and would continue to understand the contribution of those events to the Battle of Gettysburg. However, increasing congestion during the busiest times would increasingly detract from visitors' ability to quietly and solitarily reflect on the events that took place during the Battle of Gettysburg. The expected increase in visitation would result in an increased adverse impact over time.

Closure of some unauthorized trails may temporarily inconvenience some visitors but would allow park managers to facilitate safer trail use and efficient management of the remaining authorized trails. Overall, implementation of the no-action alternative would result in an adverse impact due to an increasing interference with the visitor understanding and experience of Little Round Top.

IMPACTS OF THE PROPOSED ACTION

The proposed action would result in a beneficial impact on the experience of visitors arriving in passenger vehicles because they would not have to compete with buses to park in spaces at the summit. Visitors in passenger vehicles would have an easier time finding parking because of the additional parallel parking spaces created along Sykes Avenue and the larger parking lot at the Round Top Schoolhouse parking area. The proposed intelligent transportation system would have beneficial impacts on the visitor experience because it would eliminate the uncertainty about available parking spaces at the summit and reduce the time spent looking for an available parking space. There may be negative impacts on the visitor experience when the summit spaces fill up on peak days because some visitors may not be able to walk the approximately quarter of a mile to and from the summit and the Round Top Schoolhouse parking area.

The addition of a shuttle stop for the Goldline Shuttle Service would have a beneficial impact for some visitors who either are already using the shuttle to visit other park destinations or who prefer not to use a passenger vehicle to access the site. The shuttle would eliminate the need for these visitors to locate a parking space, which is especially beneficial during the peak season. Because the shuttle is able to carry bicycles, this would result in an additional benefit for visitors bringing bicycles to the park by offering an added convenience at Little Round Top. However, the shuttle stop's location at the summit would detract from the visitor experience because of the noise and exhaust while idling during pick-up and drop-off, which would result in an adverse impact on the visitor experience.

Additional improvement under the proposed action would also result in beneficial impacts on the visitor experience of Little Round Top. The proposed gathering spaces would allow groups with licensed battlefield guides to gather for an interpretive stop without crowding and overhearing other groups. The larger gathering areas would also allow more space between visitors, allowing for improved opportunities for interpretation and/or reflection. Larger gathering areas and some wider paths would allow visitors to stop in more places without having to walk off the authorized areas or force others to walk off the authorized areas in order to move around them. The closing of unauthorized trails, improved authorized trails and gathering areas, and added crosswalks would make circulation throughout the project area more intuitive and safe, which may improve the overall visitor experience. New orientation stations at the summit and Round Top Schoolhouse parking area would provide visitors with information and wayfinding for easier understanding of the site's historical context and intended circulation patterns. The restrooms and possible retail space at the Round Top Schoolhouse would also result in beneficial impacts on the visitor experience because of the added service, convenience, and comfort.

The visitor experience would be improved through greater resource immersion opportunities that would be available through the creation of new authorized trails, particularly the historic Sykes Avenue alignment and the former horse trail. These trails would provide visitors with additional opportunities to

follow in the footsteps of the soldiers in 1863 and later the veterans during the Commemorative Era, thus increasing the immersion into the site's history. Visitors would have the option to walk between the Round Top Schoolhouse parking area, the summit, and Vincent Spur via the historic Sykes Avenue alignment that would be rehabilitated into a pedestrian trail. This route would allow pedestrians to connect to other trails leading to gathering areas and points of interest throughout the site and would provide a more enjoyable travel experience than walking along the roadside, contributing a beneficial impact on the visitor experience. The experience would also be enhanced for those visitors looking for more interpretive opportunities in the area because they would have the opportunity to walk along the proposed pedestrian trail following the former horse trail alignment, which would also provide interpretive information. The introduction of new trails may also increase the length of visits by some visitors using the trails for recreation. This could lead to visitors parking their passenger vehicles long term in the small parking area along Wright Avenue or at the Round Top Schoolhouse. If the parking areas see less turnover, other visitors may have a more difficult time finding available parking spaces during times of heavy visitation.

The two proposed routes easily traversed by visitors with limited mobility from the summit to the gathering area north of the 140th New York monument and from the bus parking area at the crescent to the gathering area at the 155th Pennsylvania Infantry marker would result in a beneficial impact to visitors with mobility limitations because they would be able to better view and experience the site. From the proposed gathering area north of the 140th New York monument, many of the significant views and key landmarks from the battle are visible. The proposed trail to the 155th Pennsylvania Infantry marker is the only trail easily traversed by visitors with limited mobility from the bus parking areas. Visitors with mobility limitations would be able to experience a more integrated visit into the site of the battle when compared to the current lack of accessible trails and gathering areas.

The introduction of modern materials in the form of asphalt surfaces, decks, guard rails, and retaining walls would detract slightly from the visitors' experience of the historic setting because these features were not part of the battle landscape. However, all modern features would be designed to be compatible with and as inconspicuous as possible in the historic setting in relation to scale, color, and materials.

During construction, some of the project area, including Sykes Avenue, would be closed to visitors. When the summit or Sykes Avenue is fully closed, visitors would only be able to experience Little Round Top from below, limiting their ability to fully understand the significance of the site. Visitors arriving by passenger vehicle from the south and east would have to be rerouted around the summit to Taneytown Road heading north, and then along Wheatfield Road, Crawford Avenue, and Warren Avenue. This would inconvenience some visitors and lead to a temporary decrease in satisfaction. Even in times when the summit is only partially closed, visitors would not be able to fully experience the summit or visit the monuments and markers in the areas closed for construction. Parking would be limited during the closure of Sykes Avenue because the summit parking spaces would be inaccessible. The presence of construction equipment and activities would be a visual and potentially audible detraction from the intended quiet and reflective atmosphere of the project area. However, phasing of construction would be implemented to limit impacts on visitor use and experience. Construction would be timed to limit disturbance to visitors. These impacts would be temporary and only last the duration of construction.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on visitor use and experience include the trail improvements, vegetation management, the rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in an improved and expanded visitor experience at Little Round Top. These impacts are described under the no-action alternative.

Implementation of the proposed action would greatly improve the visitor experience at Little Round Top. When considered with the actions identified above, the beneficial impacts of the proposed action would contribute to the overall beneficial impacts of the other actions to improve the visitor experience. Although adverse impacts during construction activities would detract from the beneficial impacts of the other actions, these adverse impacts would be localized and temporary. As a result, the overall cumulative impact would be beneficial due to the proposed improvements to visitor use and experience, particularly at the summit.

Conclusion

Under the proposed action, there would be both beneficial and adverse impacts on visitor use and experience. Visitor experience of the summit area would be more comfortable due to improved orientation and wayfinding, as well as increased parking and pedestrian capacity. Improved orientation and wayfinding would allow the park to provide more opportunities for visitor understanding of the events that took place at Little Round Top, and how those events contributed to the larger Battle of Gettysburg. The increased pedestrian capacity of gathering areas and some authorized trails would provide an improved visitor experience with greater opportunity for visitors to immerse themselves in the site's history through less crowding. The increased parking capacity means visitors would spend less time searching for a parking space during peak times, which could lead to a more pleasant experience. The addition of more authorized trails with increased resource immersion and interpretive opportunities would benefit those visitors who wish to spend more time in the area and connect with other sites. These trails would promote a circulation system that ties into the interpretation of the project area, as well as facilitate a safe and enjoyable pedestrian experience. Adverse impacts would include the potential for visitors to be required to walk a farther distance to either the proposed bus parking area at the crescent or the overflow parking lot at the Round Top Schoolhouse. Closure of some unauthorized trails may temporarily inconvenience some visitors but would allow park managers to facilitate safer trail use and efficient management of the remaining authorized trails. Temporary adverse impacts would result during construction activities when portions or all of the project area is closed to visitors. Overall, under the proposed action visitors would have improved opportunities to immerse themselves in the activities related to the events of Little Round Top and would have improved opportunities to understand the contribution of those events to the Battle of Gettysburg.

SOILS

METHODOLOGY

Potential impacts on soils are analyzed in terms of changes to the condition of the soils within the project area. A description of the current conditions of soils is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against these conditions to determine the changes that would occur under each alternative.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Under the no-action alternative, soils would continue to be compacted and eroded due to visitors walking and parking off of authorized roads and trails. Approximately 1.47 acres of soils would continue to be compacted and approximately 0.89 acres of soils would continue to be eroded to some extent. Because visitation is expected to continue to rise, these impacts would be expected to increase over time. Due to inadequate parking spaces, visitors would continue to park along the side of Sykes Avenue, continuing the existing compaction and erosion of soils in those areas. As annual visitation increases, so would the number of vehicles competing for the existing parking spaces, which would likely lead to more vehicles parked informally along the sides of the roadway. This would increase the erosion of soils along the sides of the roadways. Maintaining the existing gathering capacity and accessibility of the authorized trails in the summit area would continue to result in visitors walking on natural areas, furthering the compaction and erosion of the soil. As with parking, as annual visitation continues to increase the authorized trails and gathering areas would become more congested during times of heavy visitation and more people would walk off of the established paths and gathering areas to find space to walk or stand. This increased foot traffic would result in an increase in soil erosion and compaction. Compaction of soils decreases its permeability, resulting in higher potential for erosion of the surrounding soils as runoff during storm events tends to stay at the soil's surface instead of percolating. Higher erosion rates reduce the organic topsoil locally, resulting in a decreased ability to support plant life. Erosion may also destabilize any associated pavement.

Closure of unauthorized trails would help to eliminate further compaction and erosion damage due to trampling. Actions taken to stabilize gathering areas with clean fill and grass would help to reduce further soil erosion. However, because the authorized trails would become increasingly more crowded, a limited number of visitors may seek less crowded pathways and create new unauthorized trails, which may result in erosion and compaction in new areas.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on soils include the trail improvements in and adjacent to the park. Collectively, these actions have resulted or may result in both beneficial and adverse impacts on soils. For instance, the in-progress comprehensive trail plan and creation of new formalized trails has resulted and may result in soil disturbance and compaction during construction and use, particularly where hardened surfaces are used; however, depending on the final design

of the trails, they may be located in already disturbed areas or discourage foot traffic in sensitive areas, resulting in a minimal adverse or potentially beneficial impact on soils.

The adverse impacts of the no-action alternative would contribute to the compaction and erosion of soils within the project area, and the closure of unauthorized trails would slightly offset those adverse impacts in some areas. When considered with the actions identified above, the adverse impacts of the no-action alterative would contribute to the adverse impacts of the other actions and would lessen the potential benefits of the other actions. As a result, the overall cumulative impact would be adverse due to the scale of the soil erosion and compaction within the project area compared to the benefit of discouraging foot traffic in sensitive areas.

Conclusion

Overall, impacts on soils under the no-action alternative would be primarily adverse with some benefits associated with trail closure and any necessary stabilization work. Because overcrowding would remain an issue, the impacts described above would continue but would be limited to the areas near roadways and authorized trails, avoiding impacts on much of the soils within the project area. The soil types that would be subject to impacts are fairly common throughout the area. Park managers would continue to preserve soil resources to the extent practicable under the current management scenario. Additionally, soils in the vicinity of existing trails (authorized and unauthorized), gathering areas, and avenues have been previously disturbed by compaction and erosion due to heavy use. The extent of the impacts under the no-action alternative, while undesirable, would not lead to any new or increased adverse impacts on the existing ecological integrity of the area.

IMPACTS OF THE PROPOSED ACTION

Actions would be taken under the proposed action to protect soils from ongoing degradation; however, construction of the proposed improvements would result in temporary soil disturbance and some additional long-term compaction, as described below.

Improved and expanded parking facilities would lead to reduced potential for soil erosion and degradation along the edges of the roads. Because there would be more parking spaces at the summit, and wayfinding signs would clearly direct visitors to the larger Round Top Schoolhouse parking area, visitors would be assured that there are ample parking spaces nearby and would be less likely to pull off of the road side to park when they first approach the summit.

Further, the closure of unauthorized trails would reduce the number of visitors who walk on unpaved areas, helping to eliminate soil compaction and erosion of sensitive areas. The addition of seeding and matting would result in temporary erosion control until native species reestablish these areas naturally. The revegetation of these closed trails would result in long-term natural erosion control of these disturbed areas. The authorization of some currently unauthorized trails and the rehabilitation of existing paved trails would also encourage visitors to remain on authorized pedestrian routes. The installation of edging

and toe walls along the most heavily used trails would provide a subtle indication of the trail edges to encourage visitors to remain on designated trails.

Construction of the improvements described above would require temporary disturbance of up to 9.22 acres of soils (lasting the period of construction, likely less than a year), although a smaller footprint of approximately 3.92 acres would be subject to the long-term impacts of compaction and potentially being covered with impervious surface. See figure 8 for locations of potential land clearing and pavement demolition. However, much of this area is already subject to compaction due to vehicular and pedestrian traffic, thus mitigating additional adverse impacts on soils. During construction, erosion mitigation measures such as those listed in the "Alternatives" chapter of this document would be undertaken to minimize impacts.

The construction of the pedestrian trail following the abandoned historic alignment of the original Sykes Avenue from the Round Top Schoolhouse parking area, along Sykes Avenue near the summit area, to the trail to the 20th Maine Infantry monument would require the disturbance and exposure of up to 0.24 acres of soils. This area would be treated with an impervious surface and subject to continued compaction. However, much of this area has been previously disturbed for roads and trails, and subject to ongoing compaction. Under this alternative, the impervious surface would channel storm water appropriately and would thus minimize the potential for runoff resulting in erosion.

The construction of the crescent portion of the historic Sykes Avenue alignment and sidewalk on its east side would result in the disturbance and exposure of up to 0.39 acres of soils. Much of this area was previously disturbed and then compacted during the installation and use of historic Sykes Avenue. Therefore, although some soil disturbance would take place during construction, characteristics of soils locally would not change noticeably.

The proposed full-size parking lot at the Round Top Schoolhouse would require the exposure and disturbance of up to a maximum of 2.50 acres of soil during construction. The smaller parking area that would be constructed initially would require the exposure and disturbance of approximately 1.53 acres of soils. Construction would overlap in part with areas previously disturbed by an existing smaller parking area, the footprint of an existing building, and development associated with the former Gettysburg Electric Railroad, which would minimize new adverse impacts to soils. While most of the disturbance would only last the duration of construction, a maximum of up to approximately 0.80 acres of soils would be covered by impervious surface and would be subject to long-term compaction (as long as the pavement remains in place).

The installation of proper stormwater control in association with the proposed "A" and "B" trails, gathering areas, and parking area improvements would result in a beneficial impact on soils because it would prevent further erosion due to stormwater runoff. Because the "C" trails would be treated with a pervious stone surface, runoff would be able to infiltrate and dissipate without installation of additional stormwater control facilities. Additionally, retaining walls proposed in key areas throughout the site would prevent soil erosion in these areas and would, therefore, result in a beneficial impact.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on soils include the trail improvements. The impacts of these actions are described under the no-action alternative. Collectively, these actions have resulted in or may result in minimally adverse or potentially beneficial impacts on soils.

When considered with the actions identified above, the adverse impacts of the proposed action would contribute to the extent of soil disturbance throughout the project area. The beneficial impacts of the proposed action would somewhat offset the adverse impacts by protecting sensitive soils from further erosion, although the impacts would be localized. Overall, the cumulative impact would be slightly more adverse than beneficial because of the scale of soil disturbance required for added hardened surfaces when compared to the benefit of discouraging foot traffic in sensitive areas.

Conclusion

The proposed action would result in both adverse and beneficial impacts on soils. Some soils would be disturbed due to the construction of a parking area near the Round Top Schoolhouse, the crescent portion of the historic Sykes Avenue alignment, and sidewalks along Sykes Avenue. However, the proposed parking area would be in an area previously disturbed by a smaller existing parking area, existing building, and development associated with the former Gettysburg Electric Railroad. Erosion mitigation measures would be undertaken for all construction actions, so the impacts would be minimal. The proposed improvements to parking areas, authorized trails, and gathering areas would result in beneficial impacts on soils by discouraging visitors from walking or parking off of authorized areas and reducing the risk of continued soil erosion. The soil types that would be subject to impacts are fairly common throughout the park, and the area subject to impacts is relatively small in relation to the overall soil distribution and processes within the project area. The extent of the adverse impacts, while undesirable, would not threaten the ecological integrity of the area. The adverse impacts on soils would not result in indirect adverse impacts on other natural resources such as hydrology, water quality, or wildlife. Park managers would continue to preserve soil resources. Additionally, soils in the vicinity of existing trails (authorized and unauthorized), gathering areas, and avenues have been previously disturbed by compaction and erosion due to heavy use.

VEGETATION

METHODOLOGY

Potential impacts on vegetation are assessed based on changes to the abundance and variety of vegetation within the project area. A description of the current conditions of vegetation is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against these conditions to determine the changes that would occur under each alternative.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Under the no-action alternative, there would be both beneficial and adverse impacts on vegetation. The paved trails and gathering areas would remain in their current state with approximately 0.89 acres of land where vegetation is either trampled or non-existent due to heavy foot traffic. Visitors would continue to step off authorized trails and gathering areas to accommodate large groups, pass other visitors, or to listen to guides. These actions would continue to result in vegetation trampling in natural areas. Parking areas would remain at their current size and configuration, resulting in visitors parking cars off pavement along roadsides. This would result in impacts to vegetation through direct damage or indirectly by hindering growth due to soil damage as discussed under the previous impact topic. The closure of unauthorized trails would reduce trampling of vegetation when visitors walk along these unauthorized areas and would allow revegetation in approximately 0.19 acres of previously disturbed areas.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on vegetation include the trail improvements and vegetation management. Collectively, these actions have resulted or may result in both beneficial and adverse impacts on vegetation. For instance, the ongoing vegetation management actions limit the growth and encroachment of invasive species within the project area, and work to maintain natural and historic vegetation within the site. However, vegetation management in the park also results in the removal of some vegetation, including hardwoods, to better portray the historic appearance of the area. This loss of native vegetation has and will result in adverse impacts on vegetation. The in-progress comprehensive trail plan and creation of new formalized trails has resulted and may result in vegetation disturbance and removal for construction; however, depending on the final design of the trails, they may be located in already disturbed areas or discourage foot traffic (and therefore trampling) in sensitive areas, resulting in a minimal adverse or potentially beneficial impact on vegetation. Use of the trail system by visitors may also increase the potential for the spread of invasive plant species, which could compete with native plant species for nutrients and resources.

The adverse impacts of the no-action alternative would contribute to the disturbance and loss of native vegetation within the project area. The closure of unauthorized trails would only slightly lessen those adverse impacts by restoring some native vegetation in those localized areas. When considered with the actions identified above, the no-action alternative would noticeably contribute to the adverse impacts on vegetation, and the beneficial impacts of the other actions would only slightly lessen the adverse impacts. As a result, the overall cumulative impact would be adverse due to the expected continual disturbance and loss of vegetation due to heavy foot traffic within the project area.

Conclusion

Overall, impacts on vegetation under the no-action alternative would be both adverse and beneficial. Because overcrowding would remain an issue, trampling of vegetation would continue due to foot traffic off of authorized trails and due to parking off of paved roads along the roadways. However, the impacts would be limited to the areas near roadways and trails, avoiding impacts on much of the vegetation within the project area. Also, because some unauthorized trails would be closed, additional trampling would be mitigated in those areas. Park managers would continue to work to preserve the vegetation in the area

consistent with *Management Policies 2006*. Under the proposed action, there would be no impacts on unique vegetation, and the overall historic appearance of the landscape would remain intact.

IMPACTS OF THE PROPOSED ACTION

The proposed action would have both beneficial and adverse impacts on vegetation. These actions include closure of unauthorized trails, formalized and improved authorized trails to points of interest, expanded gathering areas, expanded parking near the Round Top Schoolhouse, and reconfigured parking in the vicinity of the summit.

The permanent or temporary closure of some unauthorized trails would help to reduce damage to vegetation from trampling and to allow the revegetation in previously disturbed areas. Approximately 0.19 acres of vegetation would be restored through the closure of unauthorized trails. The authorization and active maintenance of other currently unauthorized trails would discourage visitors from walking on areas of sensitive vegetation by providing authorized routes to desired monuments, markers, and views of the site. Rehabilitation of paved trails and gathering areas would increase the visitor capacity, which would reduce trampling of vegetation caused by visitors who step off paved authorized areas to accommodate large groups, pass other visitors, or to listen to guides.

Vegetation would be subject to removal within 9.22 acres of construction activity; however, approximately 1.36 acres of this area is not currently vegetated due to the extensive network of trails. In many areas, vegetation disturbance would be limited to the vegetation along the edges of the existing trails and roads. The total construction area also includes vegetation clearing for construction of the Round Top Schoolhouse parking area and the crescent portion of historic Sykes Avenue alignment, discussed in further detail below. Removal of hardwood trees would be avoided where possible and subject to survey for witness trees, i.e., trees that were present during the historic battle. After construction, vegetation would be reseeded with native species where possible, and the area would be monitored for invasive species to prevent establishment in the disturbed areas. Impacts from specific construction activities are described below.

The construction of the pedestrian trail following the abandoned historic alignment of the original Sykes Avenue from the Round Top Schoolhouse parking area, along Sykes Avenue near the summit area, and to the trail to the 20th Maine Infantry monument would require the disturbance and clearing of up to 0.24 acres of vegetation, including selective clearing and canopy clearing of mixed hardwood where necessary. The construction of the crescent portion of the historic Sykes Avenue alignment and a sidewalk on its east side would result in the disturbance and clearing of 0.38 acres of similar vegetation. The area would be revegetated where possible after construction, including approximately 0.10 acres of grass in the crescent portion of the historic Sykes Avenue alignment.

Up to a maximum of approximately 2.50 acres of vegetation would be disturbed for the full expansion of the parking area at the Round Top Schoolhouse. Only approximately 1.53 acres would be disturbed for the smaller initial parking area. While most of the vegetation removed would be grass, there would be some removal of mixed hardwood trees for the parking lot construction. However, the parking area at the

Round Top Schoolhouse would utilize the footprint of an existing smaller parking area and existing building to minimize potential impacts on vegetation. Additionally, up to approximately 1.50 acres would be revegetated after construction is completed.

The construction of new trails and parking areas could result in favorable habitat created for invasive species within the project area. Because most invasive species are disturbance-dependent, disturbed road and trail sides would be vulnerable to invasive species colonization. However, invasive species management would be implemented to avoid and mitigate this risk to the extent possible. This includes measures to ensure that construction-related equipment is free of mud or seed-bearing materials and that all seeds and straw material are weed-free.

Additional adverse impacts from losing vegetation for the construction activities described above would include a potential reduction in vegetated community functions such as a provision of wildlife habitat. The loss of vegetation would result in habitat fragmentation and edge effect, particularly where roads and trails meet forested areas. In areas where trails are created or widened in vegetated areas, particularly for the unauthorized trails that would become authorized, habitat fragmentation and edge effect would increase, which could result in an increased disturbance to vegetation and wildlife habitat in these areas, including a decrease in diversity and ecosystem health. This diminished diversity of native plants and wildlife habitat could lead to an increased presence of non-native species over time. Canopy tree removal in forested areas would result in increased sunlight penetration to the forest floor, which could lead to an increase in non-native species over time.

Prior to any construction activities, the areas proposed for clearing would be evaluated for witness trees and impacts to these trees would be avoided to the extent practicable. The area along the historic Sykes Avenue alignment, including the crescent portion, was originally cleared in 1897 for the construction of the carriage trail, and therefore, witness trees are unlikely to exist along the proposed pedestrian trail and bus parking area following this alignment (NPS 2012).

While vegetation clearing would result in an overall adverse impact, this would be mitigated in some areas by reseeding, which would allow natural revegetation. The restoration of approximately 0.59 acres of understory within the Vincent Spur area near the 20th Maine Infantry monument would return natural vegetation to the site where it has been trampled and cleared over years of visitation. See figure 9 for locations of proposed revegetation.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on vegetation include the trail improvements, and vegetation management. The impacts of these actions are described under the no-action alternative. Collectively, these actions have resulted in or may result in adverse and beneficial impacts on vegetation.

The beneficial impacts of the proposed action would contribute to the protection and reestablishment of native vegetation within the project area. The adverse impacts of vegetation removal for improvements would slightly lessen the beneficial impacts. When considered with the actions identified above, the proposed action would greatly contribute to the beneficial impact on vegetation and the vegetation removal,

and potential for invasive species spread would only slightly lessen that beneficial impact. As a result, the overall cumulative impact on vegetation would be beneficial due to the scale of vegetation restoration and protection undertaken as called for in the vegetation management plan when compared to the vegetation disturbance required for improvements proposed in this plan.

Conclusion

The proposed action would result in both adverse and beneficial impacts on vegetation. Some vegetation would be disturbed or removed during the construction of parking areas, authorized trails, and gathering areas. The National Park Service would mitigate these impacts through reuse of previously disturbed areas and revegetation after construction. The proposed improvements to parking areas and authorized trails would result in beneficial impacts on vegetation by discouraging visitors from walking or parking off of authorized areas and, therefore, reducing the risk of trampling. These activities would provide a strategy by which park managers could actively preserve and restore the native plant populations by minimizing human impacts. The vegetation cleared for infrastructure improvements is a very small portion of locally common vegetation types; therefore, the proposed action would not threaten the ecological integrity provided by the native vegetation of the area. Additionally, the removal of some vegetation within the project area would not result in a diminished integrity of the cultural landscape.

CULTURAL LANDSCAPES

METHODOLOGY

Potential impacts on cultural landscapes are analyzed in terms of changes to character-defining features of the resources, based on the Director's Order 28 (DO-28) definition of a cultural landscape. DO-28 defines a cultural landscape as "a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions" (NPS 2002). These features contribute to the property's integrity, which is composed of location, design, setting, materials, workmanship, feeling, and/or association. A description of the current condition of the cultural landscape is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against this condition to determine the changes that would occur under each alternative. It should be noted that this section assesses impacts in accordance with the requirements of the National Environmental Policy Act. An NHPA Section 106 assessment of effect is presented at the end of this chapter.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Under the no-action alternative, there would be both beneficial and adverse impacts on the cultural landscape. Visitor use patterns would continue and heavy foot traffic in sensitive areas may increase, as described under the "Visitor Use and Experience" impact topic. Erosion and vegetation trampling would continue to be an issue and may increase, as described under the "Soils" and "Vegetation" impact topics.

Because topography and vegetation patterns that existing during the Battle Era are an important part of the cultural landscape, the continuation or increase in erosion or vegetation trampling would continue to result in damage to the cultural landscape. The closure of unauthorized trails would prevent additional erosion and tree root damage, which would help maintain the overall landscape. Closing these trails would also allow revegetation of the disturbed area, restoring some of the natural and historic integrity of the cultural landscape. In addition to damage to natural features, the crowding of gathering areas and paths detracts from the contemplative atmosphere of the summit, as does the noise from vehicles along Sykes Avenue. Overall, the continuation of the current management scenario would continue to result in impacts that are detrimental to the cultural landscape.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on cultural landscapes include trail improvements, vegetation management, the agriculture permit program, rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in in an overall beneficial impact on cultural landscapes. For instance, the ongoing vegetation maintenance activities within the park actively maintain the historic appearance and character of the cultural landscape, including important vegetated and cleared areas. The use of machinery, including mowers, results in visual and noise disturbances within the cultural landscape, though these are temporary impacts. The in-progress comprehensive trail plan and creation of new authorized trails has resulted and may result in changes to the cultural landscape if the trails were not historically present; however, depending on the final design of the trails, they may be located in already disturbed areas or discourage foot traffic in sensitive areas, resulting in a minimal adverse impact on cultural landscapes. The agriculture permit program results in beneficial impacts on the cultural landscape because the presence of farms within the larger landscape around the project area maintains the historic appearance of the viewshed from the summit, where farms historically existed beyond the wooded Little Round Top. Previous efforts of the National Park Service have restored and improved the cultural resources within the project area, leading to a beneficial impact on cultural resources. While the new interpretive elements that may be installed as part of the in-progress interpretive plan would introduce modern materials into the cultural landscape, they would be designed to have a visual low-impact and be complementary to the historic landscape through color, materials, and scale, which would mitigate the adverse impacts.

The adverse impacts of the no-action alternative would contribute to the degradation of the cultural landscape. When considered with the actions identified above, the no-action alternative would detract from the other efforts to preserve and enhance the integrity of the landscape. As a result, the overall cumulative impact would be adverse due to the expected continual disturbance of the cultural landscape due to erosion, vegetation trampling, and overcrowding of the sensitive natural resources and contemplative atmosphere that contribute to the landscape.

Conclusion

The no-action alternative would result in continued and potentially increased adverse impacts on the cultural landscape from ongoing visitor use patterns and crowding of the existing infrastructure. The no-action alternative would also result in minor beneficial impacts because where unauthorized trails would

be closed, the erosion process by pedestrian traffic in those areas would be limited. Increased crowding at the summit would continue to detract from the contemplative atmosphere that is important to the cultural landscape. Overall, however, the topography and vegetation patterns of Little Round Top that are identified as character-defining features of the cultural landscape would remain intact. The National Park Service would continue to manage the project area in a manner consistent with the park purpose and significance as identified in the park's foundation document (NPS 2016).

IMPACTS OF THE PROPOSED ACTION

Actions under the proposed alternative would have both beneficial and adverse impacts on the cultural landscape. The impacts from the closure of some unauthorized trails would be the same as under the no-action alternative. Other unauthorized trails would be treated with a crushed stone or other hardened surface and become authorized. This would introduce modern materials to the cultural landscape and have a direct visual impact. However, all new materials would be contemporary, but compatible to the historic landscape to minimize potential impacts.

The addition of an intelligent transportation system would introduce modern materials into the cultural landscape that would detract from the historic character. If modern, electronic signs are included in the design of the intelligent transportation system, the lights and modern materials would contrast with the solemn, quiet atmosphere and feeling of the cultural landscape. The final design and placement of these signs would be designed to be as non-intrusive on the landscape as possible.

Establishing new gathering areas near popular landmarks would have direct beneficial impacts on the cultural landscapes by preventing visitors from congregating in more sensitive areas. This would reduce the adverse impacts of vegetation trampling and soil erosion, which would prevent additional degradation of the visual integrity of the cultural landscape. Modern materials would be introduced in these areas as signage, hardened walking surfaces, retaining walls, toe walls, and guard rails. These modern materials would have an adverse impact on the cultural landscape by detracting from the historic setting. However, the impact would be minimized by the use of contemporary, but compatible materials in the landscape. Terraces that follow the existing grade as much as possible would be used in areas highly visible and of high historic integrity because they would have a minimal visual intrusion on the cultural landscape. Raised decks would have a greater visual intrusion on the landscape than would terraces and would only be used in areas less visible from other points within the landscape. Proposed guard rails would use thin profiles, matte finishes, and dark colors in order to be as inconspicuous as possible when viewed from a distance. Because modern materials are already present in the project area in the form of paved roads, wayside exhibits, and hardened trails, the introduction of additional asphalt surfaces, with a comprehensive placement other modern materials would have a minimal adverse impact.

The proposed parking area at Round Top Schoolhouse would be sited in an area of relatively low historic integrity, expanding on a smaller, existing parking lot. The parking area location would be mostly screened from view by existing vegetation, particularly from historically significant areas of United States Avenue, Trostle Farm, Munshower Field, and Houck's Ridge to the north and west. However, the introduction of modern materials and the concentration of passenger vehicles and buses would detract

from the historic views of the project area when visible, particularly during the winter season when vegetation loses its leaves. The rehabilitation and reuse of the Round Top Schoolhouse would result in adverse impacts by altering the appearance of the historic building within the cultural landscape. However, the character-defining front façade would be preserved and would continue to maintain the historic integrity of this location. A determination of eligibility found that the existing Carriage House is not eligible for listing in the National Register and does not contribute to the historic integrity of the project area. Therefore, removal of this building would not constitute an adverse impact on the cultural landscape.

The rehabilitation of the historic Sykes Avenue alignment as a trail would complement the Commemorative Era landscape because it was part of the original meandering carriage road to and from the summit. Although the proposed trail would complement the Commemorative Era, the use of the crescent portion of the historic Sykes Avenue alignment for a bus parking area would result in changes to the Battle Era landscape. The removal of approximately 0.39 acres of hardwood trees and vegetation for construction of the crescent would change the character of the historically dense forest of the east slope in this area. The introduction of modern pavement and use of the parking area by buses would detract from the historic character of the landscape in this area, thus resulting in an adverse impact on the cultural landscape.

If the in-progress cultural landscape report for the Commemorative Era recommends removing the existing asphalt paving on the pedestrian trail following historic Chamberlain Avenue near the 20th Maine Infantry monument and the National Park Service follows through with its removal, there would be a beneficial impact on the cultural landscape because the modern material of pavement would be removed, improving the Battle Era conditions of that area. If the in-progress cultural landscape report does not recommend its removal and the pavement remains, the pavement would continue to detract from the Battle Era conditions of the landscape in that area.

The rehabilitation of the former horse trail for pedestrian use offers interpretation potential for the dense forest character area. Because the location of this trail is in a densely-wooded area, any modern materials added for wayfinding and interpretation would not be visible from the summit during most of the year. In the winter months, when vegetation loses its leaves, modern materials may be visible from some areas of the summit. However, the materials, color, and location of the modern features would be designed to be as inconspicuous as possible when viewed from a distance.

Not only would the introduction of modern materials in the project area result in changes to the view throughout the historic site, but it would also result in changes to views into the site from other historically significant vantage points. These views include from Emmitsburg Road, from South Confederate Road to the west, from Crawford Avenue, from Houck's Ridge, and from Devil's Den. New gathering areas, pedestrian trails, guard rails, retaining walls, and interpretive signage could detract from the historic views from these areas, many of which reflect the views Confederate soldiers had as they prepared to charge up the western face of Little Round Top and confront the Union soldiers above. However, the location, design, materials, and colors of the modern materials would be chosen carefully to be as inconspicuous as possible when viewed from these historic areas.

Lastly, the construction process would have temporary impacts on the cultural landscape due to the visual presence of construction vehicles and the noise they may produce. Mitigation measures, including standard noise abatement measures would limit potential impacts on the cultural landscape.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on cultural landscapes include the trail improvements, vegetation management, the agriculture permit program, rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in an overall beneficial impact on cultural landscapes. These impacts are described under the no-action alternative.

Under the proposed action, beneficial impacts would contribute to the preservation and protection of contributing features of the cultural landscape. The introduction of modern materials would diminish some of those beneficial impacts by detracting from the atmosphere and feeling of the cultural landscape. When considered with the actions identified above, the adverse impact of the proposed action would somewhat detract from the overall beneficial impact of the other actions. As a result, the overall cumulative impact on the cultural landscape would be slightly more adverse than beneficial due to the introduction of modern materials.

Conclusion

Implementation of the proposed action would have both beneficial and adverse impacts on the cultural landscape of the summit. Actions taken under this alternative would have beneficial impacts because visitors would have fewer opportunities to inadvertently damage or erode landscape elements. This would preserve the topographical, natural, and cultural features significant to the historic battle and its commemoration by adapting the trails and gathering areas to the high volume of visitors. Though modern features such as gathering areas and pavement would adversely impact the cultural landscape, this impact can be minimized by using complementary materials in locations that would not damage the landscape. The location of any temporary staging area for construction would be chosen to minimize any disturbance to the landscape. In the event of a disturbance, mitigation measures would be in place to restore features of the battlefield and replant native species. Due to the new circulation pattern, adequate signage would be installed, but designed to be minimally visually intrusive on the landscape, with minimal direct impacts on landscape elements such as vegetation. The proposed parking area near the Round Top Schoolhouse would be in an area of relatively low historic significance, out of the viewshed of the summit, and screened from other significant viewsheds by vegetation. The improvements in the proposed action would ensure resource protection and preservation of the fundamental resources and values identified in the park's foundation document while accommodating high-density use (NPS 2016). The National Park Service would continue to manage the project area in a manner consistent with the park purpose and significance as identified in the foundation document (NPS 2016) and with the treatment recommendations of the cultural landscape report (NPS 2012).

HISTORIC STRUCTURES

METHODOLOGY

Potential impacts on historic structures are evaluated based on changes to character-defining features of the resources, which are the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places. This approach is derived from both the *Secretary of the Interior's Standards for Rehabilitation of Historic Buildings* as well as the regulations of the Advisory Council on Historic Preservation implementing the provisions of Section 106 of the National Historic Preservation Act. A description of the current conditions of historic structures is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against these conditions to determine the changes that would occur under each alternative. It should be noted that this section assesses impacts in accordance with the requirements of the National Environmental Policy Act. An NHPA Section 106 assessment of effect is presented at the end of this chapter.

IMPACTS OF THE NO-ACTION ALTERNATIVE

The no-action alternative would have both adverse and beneficial impacts on the historic structures. Because inadequate authorized trails and gathering areas would continue to cause visitors to leave the authorized areas, walls, breastworks, and monuments would continue to be at risk of damage due to visitor contact and soil erosion on which the structures sit. Because the annual visitation is expected to increase, these adverse impacts are also expected to increase over time. The closure of unauthorized trails would prevent visitors from easily or inadvertently approaching some sensitive historic structures such as monuments and breastworks. This would result in a beneficial impact on these structures by limiting potential damage caused by touching the historic structures directly or by eroding the soils that they sit upon. However, as visitation increases and authorized trails become more crowded, a limited number of visitors would likely continue to walk off of authorized trails and climb over stone breastworks, resulting in damage to these structures. Gathering areas would maintain their current capacity, which would have potential impacts on historic structures when visitors leave the authorized gathering areas or park outside designated spaces. This could result in an increase of soil erosion, which could become a hazard to nearby monuments and stone breastworks. Also, the continuation of overcrowded gathering areas and paths would result in some visitors being unable to fully experience or understand the meaning of some historic structures because the contemplative historic setting would continue to be degraded by the visual and audible detraction of crowds and vehicles idling nearby.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on historic structures include the trail improvements, vegetation management, the rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in an overall beneficial impact on historic structures. For instance, the ongoing vegetation maintenance activities within the park actively maintain the historic setting of the historic structures, including important vegetated and cleared areas. The use of machinery, including mowers,

results in visual and noise disturbances within the setting, though these are temporary impacts. The in-progress comprehensive trail plan and the creation of new formalized trails may discourage the creation of unauthorized trails and foot traffic in sensitive areas near historic structures, resulting in a potentially beneficial impact on these resources. Previous efforts of the National Park Service have restored and improved the historic structures within the project area, leading to a beneficial impact on these resources. While the new interpretive elements that may be installed as part of the in-progress interpretive plan would introduce modern materials into the setting of the historic structures, they would be designed to have a visual low-impact and be complementary to the historic setting through color, materials, and scale, which would mitigate the adverse impacts.

The adverse impacts of the no-action alternative would contribute to the overall risk of damage to historic structures by visitors walking off of authorized areas. The closure of unauthorized trails would only slightly diminish the adverse impacts. When considered with the actions identified above, the no-action alternative would diminish other efforts to preserve and enhance the integrity of the historic structures and their settings. As a result, the overall cumulative impact would be adverse due to the expected continual disturbance to the historic structures, the soils on which they sit, and their historic settings.

Conclusion

The no-action alternative would result in adverse impacts on historic structures due to continued and potentially increased erosion around the base of monuments on the approach to and on the summit of Little Round Top. Also, visitors would continue to walk off of authorized areas and may continue to climb over historic breastworks. In areas where unauthorized trails are closed, such a risk would be reduced and sensitive structures along those alignments would be protected. The National Park Service would continue to preserve the historic features, materials, and qualities of the historic structures in the project area in a manner consistent with the park purpose and significance as identified in the park's foundation document (NPS 2016). Although some visitors may not be able to fully experience the historic structures as intended due to overcrowding during peak times, overall, the historic structures of the area would continue to aid in visitor understanding of the events that occurred on Little Round Top.

IMPACTS OF THE PROPOSED ACTION

Under the proposed action, the same impacts on historic structures would result from closing unauthorized trails as under the no-action alternative. In addition, there would be increased beneficial impacts on historic structures when compared to the no-action alternative because authorized trails and gathering areas with increased capacity near key monuments and markers would discourage visitors from approaching sensitive structures and from congregating in sensitive areas. These gathering areas and trails would be located and designed to not physically disturb any historic structures.

New gathering areas at the summit would introduce modern materials and increase grouping of visitors around certain monuments, which would slightly change the structures' historic settings. However, these changes would be minimal because the new materials would be contemporary, but complementary to the historic setting. Also, the proposed gathering areas generally correspond to areas where groups already gather, therefore mitigating new adverse impacts. Trails and gathering areas would be located away from

sensitive stone breastworks, allowing visitors to view them while discouraging visitors from approaching or climbing over them. This would result in a beneficial impact on the historic stone breastworks through protection from human disturbance.

Improvements along Sykes Avenue would result in changes to the historic setting. The proposed sidewalk, curbs, and crosswalks along and across Sykes Avenue would detract from the historic appearance of the area, as would the bus drop-off deck proposed at the summit. The rehabilitation of the historic early Sykes Avenue alignment into a pedestrian trail would result in a beneficial impact on the historic structure by reintroducing its alignment and historic use as a circulation pattern into the project area. The original Telford road bases of the historic alignment are known to be extant within the project area. Archeological surveys to identify the location and condition of the original Telford road bases would be undertaken to inform the location and construction methods of the proposed trail. These historic Telford road bases would be protected during construction to avoid any adverse impacts.

The Round Top Schoolhouse is a contributing resource to the Gettysburg Battlefield Historic District, and therefore, alterations would result in adverse impacts on the historic structure. However, the character-defining feature of the front façade would remain unaltered, maintaining the building's historic integrity and mitigating the adverse impacts. The interior and concrete addition on the north elevation are not considered to be character-defining features; therefore, removal of features and adaptive reuse of the interior would not result in adverse impacts on historic structures. All rehabilitation and reuse efforts for this building would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. The Carriage House was determined to be a non-contributing structure to the Gettysburg Battlefield Historic District and not eligible for listing in the National Register. Therefore, the removal of the Carriage House for construction of a parking lot would not be considered an adverse impact on historic structures. The construction of a parking lot within the vicinity of the historic Round Top Schoolhouse would result in changes to its historic setting; however, the parking lot would be set back behind the building, mitigating adverse impacts. The National Park Service has consulted with the Pennsylvania State Historic Preservation Office regarding potential treatments to the Round Top Schoolhouse, and would continue this consultation as needed, as design continues.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on historic structures include the trail improvements, vegetation management, rehabilitation of cultural landscapes and historic structures, and improvements to interpretation. Collectively, these actions have resulted or may result in an overall beneficial impact on historic structures. The impacts are described under the no-action alternative.

The beneficial impacts of the proposed action would contribute to the preservation and protection of the historic structures within the project area. The adverse impacts of modern materials introduced to the historic setting would detract from some of those benefits. When considered with the actions identified above, the proposed action would contribute to the beneficial impact of the other actions, although the adverse impacts would slightly diminish these benefits. As a result, the overall cumulative impact on historic structures would be more beneficial than adverse due to the actions that would protect historic structures from further damage due to erosion and visitor contact.

Conclusion

The proposed action would have both beneficial and adverse impacts on historic structures within the project area. This alternative would be beneficial because visitors would have fewer opportunities to inadvertently damage breastworks, walls, and monuments by travelling off of authorized trails and gathering areas. Though modern features such as gathering places would diminish the historic setting and, therefore, integrity of some historic structures, this impact can be minimized by placing them in locations that are visually unobtrusive and by using material complementary to the historic materials. All rehabilitation efforts would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to minimize adverse impacts and ensure the long-term preservation of the historic structures. The improvements in the proposed action would ensure resource protection and preservation of the fundamental resources and values identified in the park's foundation document (NPS 2016) while accommodating high-density use. The proposed action would allow the National Park Service to manage visitor use to preserve the historic features, materials, and qualities of the historic structures in the project area. The preservation and protection of the historic structures throughout the site would improve and enhance visitor understanding of the events that occurred on Little Round Top. Under the proposed action, the National Park Service would be able to preserve and protect the resources associated with the Battle of Gettysburg and its commemoration, as well as preserve the overall historic integrity of the site.

ARCHEOLOGICAL RESOURCES

METHODOLOGY

Archeological resources are the remains of past human activity and the records documenting the analysis of such remains (NPS 2002). Potential impacts on archeological resources are evaluated based on the amount of disturbance to an archeological resource and the degree to which the integrity remains or is otherwise lost without recordation of the remains. A description of the current conditions of archeological resources is provided in "Chapter 3: Affected Environment." Alternatives were evaluated against these conditions to determine the changes that would occur under each alternative. It should be noted that this section assesses impacts in accordance with the requirements of the National Environmental Policy Act. An NHPA Section 106 assessment of effect is presented at the end of this chapter.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Because the archeological record of Little Round Top is not fully known, the entire site is considered archeologically sensitive. Under the no-action alternative, unauthorized trails would be closed to discourage visitor use, minimizing erosion to soils and, therefore, damage to potential, unrecorded archeological sites. Though erosion from pedestrian traffic would be stabilized in those areas, the overcrowded pedestrian areas along the remaining trails and gathering areas would continue to cause visitors to step off the trails and create similar erosion patterns in the future. This erosion would have adverse impacts by jeopardizing any potential intact underground deposits. Areas previously disturbed by development of the Commemorative Era features, existing wayside exhibits, and decades of visitor foot

traffic have a lower risk of containing archeological resources with intact context and integrity. However, because annual visitation and, therefore, crowded conditions are expected to increase, there may be a limited number of visitors who seek less crowded pathways and create new unauthorized trails. This may result in erosion and compaction in undisturbed areas, putting potential unknown and intact archeological resources at risk of damage.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on archeological resources include the trail improvements, vegetation management, and the improvements to interpretation. Collectively, these actions have resulted or may result in beneficial and adverse impacts on archeological resources. For instance, ongoing vegetation management throughout the site has the potential to result in ground disturbance that could have an adverse impact on any intact archeological resources that may be present. The in-progress comprehensive trail plan and the creation of new formalized trails have resulted and may result in soil disturbance and compaction during construction and use, which has the potential to damage or disturb unknown intact archeological deposits; however, depending on the final design of the trails, they may be located in already disturbed areas or laid out to discourage foot traffic in known sensitive areas, resulting in a minimal adverse or potentially beneficial impact on archeological resources. The potential installation of new interpretive elements for the in-progress interpretation plan would likely require ground disturbance; however, some exhibits would likely be designed to replace existing exhibits on previously-disturbed ground, and new ground disturbance would be subject to archeological clearance as appropriate. Therefore, the potential for adverse impacts on archeological resources would be minimized.

The risk of adverse impacts of the no-action alternative would contribute to the overall risk of disturbance to unknown and intact archeological resources in the project area. The closure of unauthorized trails would only slightly lessen these adverse impacts. When considered with the actions identified above, the no-action alternative would contribute to the risk of disturbance to archeological resources. As a result, the overall cumulative impact would be adverse due to the expected continual and increasing erosion of soil due to heavy foot traffic at the summit.

Conclusion

The no-action alternative would have both adverse and beneficial impacts on archeological resources. Because some unauthorized trails would be closed, impacts of the erosion process on potential unrecorded archeological sites by pedestrian traffic in those areas would be limited. However, without further interventions, the patterns would continue along inadequate authorized trails and gathering areas, which would continue to cause visitors to leave the authorized areas, resulting in adverse impacts on possible archeological resources through degradation and erosion. Though these impacts would be adverse, they would be limited to the areas around the trails and gathering areas, which have been previously disturbed by development of the Commemorative Era features and decades of visitor foot traffic. Park managers would continue to treat the site as archeologically sensitive and protect archeological resources, including managing archeological resources in situ to the extent possible.

IMPACTS OF THE PROPOSED ACTION

Under the proposed action, the same impacts on archeological resources would result from closing unauthorized trails as under the no-action alternative. The authorization and active maintenance of some currently unauthorized trails and the creation of new gathering areas could impact potential unknown intact underground deposits through ground disturbance during construction or soil compaction during use. These authorized trails and gathering areas would also have beneficial impacts on archeological resources by preventing visitors from walking on sensitive areas, minimizing damage to potential unrecorded sites through soil erosion caused by foot traffic.

The expansion of the visitor parking at the Round Top Schoolhouse, paving of the crescent portion of the historic Sykes Avenue alignment, and construction of sidewalks along Sykes Avenue, as well as the installation of orientation stations and wayfinding signs might have impacts on potential, unrecorded archeological sites due to ground disturbance and soil compaction during construction and installation. However, the proposed parking areas at the Round Top Schoolhouse is partially located on land previously disturbed by an existing smaller parking area, an existing building, and a development associated with the former Gettysburg Electric Railroad. The use of these previously disturbed areas makes encountering any unknown and intact archeological resources less likely than areas not previously disturbed. The proposed authorized trails and gathering areas are located in areas already experiencing foot traffic and the hardened surfaces could protect some unknown intact archeological deposits from further soil erosion, minimizing the impacts.

Rehabilitation of the landscape through vegetation clearing and revegetation efforts would require ground disturbance and soil compactions throughout the project area during implementation. These actions would have the potential to disturb the context of any intact archeological resources within the area of ground disturbance, which would result in an adverse impact. However, many areas to be revegetated have been previously disturbed either by authorized trails or by foot traffic on unauthorized trails, where intact archeological resources are unlikely to be encountered. Additionally, an archeological monitor may be present during ground disturbing activities in areas not previously disturbed to ensure adverse impacts are mitigated or avoided.

Archeological investigations would precede the installation of new gathering spots or wayfinding signs requiring ground disturbance, including any temporary construction staging areas. Any impacts on discovered sites would be avoided, minimized, or mitigated to the extent practicable. Archeological testing should be conducted to identify the location of the historic Sykes Avenue alignment and existing Telford road bases. The cultural landscape report also suggests the retaining walls for the early Sykes Avenue alignment may be extant under the surface and a survey should be completed before commencing any construction activity (NPS 2012). This testing would mitigate adverse impacts on these potential archeological resources because when their locations are known, they could be avoided and protected during implementation of the proposed action.

Cumulative Impacts

Other past, present, and reasonably foreseeable actions that have or would have impacts on archeological resources include the trail improvements, and the improvements to interpretation. Collectively, these

actions have resulted or may result in beneficial and adverse impacts on archeological resources. These impacts are described under the no-action alternative.

The beneficial impacts of the proposed action contribute to the protection of potential intact archeological resources within the project area. These benefits are only slightly lessened by the risk of disturbance to unknown and intact resources due to ground disturbance. When considered with the actions identified above, the proposed action would contribute to the protection of archeological resources and would reduce some of the risk of adverse impacts. As a result, the overall cumulative impact on archeological resources would be beneficial due to the protection of sensitive resources by the authorized trails and gathering areas with larger capacities that would discourage visitors from walking off of authorized areas.

Conclusion

The proposed action would have both beneficial and potential adverse impacts on archeological resources within in the project area. Although many actions would require ground disturbance that has the potential to result in disturbance to archeological resources, the efforts to keep vehicles and pedestrians off of sensitive areas and prevent further erosion would prevent future disturbance to resources. For all actions requiring ground disturbance, the National Park Service would avoid impacts to archeological resources wherever possible, completing Phase II archeological study where needed. These studies would provide information on the location of intact archeological resources, including Telford Road bases, allowing the National Park Service the ability to coordinate construction activities that avoid disturbance to these resources where possible. An archeologist would be present during construction if desired, to mitigate potential adverse impacts by ensuring any unanticipated discoveries are properly managed and documented to avoid damage or loss. If discovered, park managers would manage any archeological resources in situ to the extent possible. Additionally, an Unanticipated Discovery Plan would be in place to mitigate any adverse impacts on potential archeological resources. Though requiring some ground disturbance, the proposed action would result in beneficial impacts on archeological resources because infrastructure improvements would discourage travel off of authorized areas, providing fewer opportunities to inadvertently damage resources through erosion or soil compaction.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 5 below summarizes the impacts of each alternative on the impact topics analyzed in detail above.

TABLE 5. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Resource	No-Action Alternative	Proposed Action/NPS Preferred Alternative
Visitor Use and Experience	■ Visitors park along roadside because there are no available parking spaces or because of uncertainty about whether or not spaces are available. ■ Continued and increased overcrowding at the summit detracts from the opportunity to reflect on or learn about the activities that took place at or near Little Round Top. ■ Noise and exhaust fumes from bus drop-off may detract from visitors' experience of the summit ■ Some visitors need to adjust to no longer using unauthorized trails	■ Orientation stations provide information and wayfinding. ■ Visitors would be better able to find parking due to expanded parking and possible use of an ITS. ■ A shuttle stop at the summit provides an additional method of access to the site, improving convenience. ■ Improved trails and crosswalks make circulation through the area more intuitive and safe. ■ More immersive opportunities available to visitors due to the rehabilitated horse trail. ■ Larger capacity allows more space between visitors, allowing for improved interpretation and/or reflection. ■ Some visitors would need to adjust to no longer using unauthorized trails (same as the no-action alternative). ■ Accessible trail provides opportunity for visitors with limited mobility to view significant views and monuments ■ Accessible restrooms provide an improved visitor comfort
Soils	■ Continued and increased compaction and erosion along authorized trails and gathering areas (currently approx. 1.74 acres of compaction and approx. 0.89 acres of erosion) ■ Continued compaction and erosion from parking along roadway ■ Closing unauthorized trails would reduce compaction and erosion in these areas	■ Approx. 9.22 acres of soils exposed during construction and approx. 3.92 acres of long-term compaction. ■ Expanded parking facilities lead to reduced potential for soil compaction and erosion from road-side parking. ■ Improving authorized trails and gathering areas would encourage visitors to stay in authorized pedestrian areas, reducing potential for soil compaction and erosion from visitors walking outside these areas. ■ Closing unauthorized trails would reduce compaction and erosion in these areas (same as no-action) ■ Improved stormwater runoff management and new retaining walls would reduce erosion.
Vegetation	■ Continued and increased trampling of vegetation along trails and gathering areas (currently approx. 0.89 acres) ■ Cars parked alongside roadways and outside designated parking areas continues to damage vegetation by hindering or preventing growth ■ Closing unauthorized trails would help eliminate further damage to vegetation from trampling and allow revegetation in these areas	■ Vegetation subject to disturbance within construction area of approx. 9.22 acres; approx. 2.38 acres restored after construction completed ■ Expanded parking facilities lead to reduced potential for vegetation damage from road-side parking ■ Rehabilitation of paved trails and gathering areas would reduce the potential for trampling of vegetation ■ Closing unauthorized trails would help eliminate further damage to vegetation from trampling and allow revegetation in these areas (same as no-action)

TABLE 5. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONT.)

Resource	No-Action Alternative	Proposed Action/NPS Preferred Alternative
Cultural Landscapes	■ Closing unauthorized trails would help prevent damage to landscape features ■ Erosion of inadequate gathering areas degrades immediate landscape ■ Crowded trails and gathering areas, as well as idling vehicles detracts visually and audibly from the contemplative atmosphere of the cultural landscape	■ Same benefits of closing unauthorized trails as the no-action alternative ■ Potential for adopting and paving some unauthorized trails, and establishing new gathering areas, directs visitors away from sensitive areas ■ New paved trails would impact the site by introducing modern materials ■ Rehabilitation of old Sykes Avenue alignment enhances Commemorative Era cultural landscape ■ Expanded parking at Round Top Schoolhouse is sited in an area of low historic integrity and would be screened from the summit by vegetation ■ Rehabilitation of former horse trail for pedestrian use offers interpretation potential for this character area ■ Visitor access to the project area would be limited during construction activities, inconveniencing some visitors.
Historic Structures	■ Closing unauthorized trails would help prevent damage to nearby historic structures ■ Erosion of inadequate gathering areas may impact nearby monuments ■ Visitors continue to climb over breastworks while traversing the summit outside of authorized trails, resulting in damage to the structure ■ Crowded trails and gathering areas detracts from historic setting	■ Same benefits of closing unauthorized trails as the no-action alternative ■ Authorized trails and gathering areas protect historic structures by discouraging visitors from walking in unauthorized areas too close to sensitive structures. ■ Potential for adopting and paving some unauthorized trails directs visitors away from breastworks ■ New gathering areas at summit slightly alters the historic setting, but helps prevent inadvertent damage to nearby monuments
Archeological Resources	■ Closing unauthorized trails would help preserve potential archeological sites ■ Continued and increased overcrowding at gathering areas and trails would continue to push visitors into the surrounding landscape, jeopardizing any potential intact underground deposits	■ Same benefits of closing unauthorized trails as the no-action alternative ■ Potential for adopting and paving some unauthorized trails, establishment of new gathering spots, and any new wayfinding installations could impact archeological sites, if any are present and undisturbed. ■ Expanded visitor parking at Round Top Schoolhouse could impact potential sites, if present and undisturbed. ■ Rehabilitation and creation of gathering areas and pedestrian trails could damage intact archeological resources if extant. ■ Rehabilitated gathering areas and trails could protect potential archeological resources by keeping visitors off sensitive areas outside of authorized areas, and by preventing further soil erosion.

ASSESSMENT OF EFFECT

The analyses of effects on historic properties that are presented in this section respond to the requirements of Section 106 of the National Historic Preservation Act, in accordance with the regulations implementing Section 106 (36 CFR 800, Protection of Historic Properties). The effects of the no-action alternative and the proposed action are summarized below. The analysis of effects on historic properties was based on a review of previous studies, consideration of the proposed design concepts, and other information provided by the National Park Service. For this assessment of effect, the geographic study area is generally defined as the area of potential effect, as described in the "Purpose and Need" chapter above.

NO-ACTION ALTERNATIVE

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the no-action alternative would result in no adverse effect on historic properties within the area of potential effect. Although there would be some damage to the topography and vegetation through erosion and trampling due to heavy foot traffic, the overall steep, boulder-strewn slope that is identified as a character-defining feature of Little Round Top would remain intact. The west side of the summit would remain mostly cleared of vegetation while the east side would retain its dense forest, both of which were vital to the battle and are identified as character-defining features. Although portions of the east slope, particularly near the 20th Maine Infantry monument, are lacking regenerative understory due to heavy foot traffic, the overall vegetation of the east slope would remain as a dense mixed hardwood forest. The linearity, alignment, and construction methods of the historic avenues within the project area would not be altered and would maintain their integrity where it currently is retained. The historic monuments, markers, and tablets within the project area would not be altered or removed and would retain their existing integrity. Therefore, the overall historic character, appearance, and setting of historic properties within the area of potential effect would continue to be maintained through the continuation of current management practices. No character-defining elements for which a property is eligible for listing in the National Register would be removed or altered in a way that would diminish the overall integrity of the historic property.

PROPOSED ACTION

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of the proposed action would result in no adverse effect on historic properties within the area of potential effect. All rehabilitation efforts would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and measures are in place to avoid any effects on cultural landscapes, historic structures, and archeological resources within the area of potential effect.

There would be no adverse effect on the cultural landscape within the area of potential effect. The existing walkways are in poor condition and retain no integrity to the NPS Mission 66 time period.

Circulation features from the Commemorative Era along the summit (Sykes Avenue) no longer retain integrity from the period of significance for these park-related resources. There is precedent for installation of retaining walls and terraced surfaces for access on the summit of Little Round Top from the Commemorative Era development previously removed by the National Park Service. All modern materials including decks, terraces, guard rails, retaining walls, signage, and hardened trails, would be designed to be clearly differentiated from, but compatible with the historic landscape. The scale, color, materials, and design of all modern materials would be complementary to the cultural landscape and would be designed to be minimally conspicuous when viewed from a distance. Therefore, views into the project area from the surrounding historic properties would not be affected. In areas where modern materials would be more visually obtrusive, such as near the 20th Maine Infantry monument, historically-compatible vegetative screening would be implemented to mitigate any visual detraction from the cultural landscape. All proposed improvements would be fully reversible and would be visually and physically light on the landscape and the area of potential effect.

The proposed action would have no adverse effect on historic structures within the area of potential effect. The improvements proposed by the National Park Service would not alter any of the historic structures' characteristics that qualify them for inclusion in the National Register in a manner that diminishes their historic integrity. The Round Top Schoolhouse, which is considered a contributing resource to the Gettysburg Battlefield Historic District, would be altered, but the historic façade would remain. The adaptive reuse of the building, including the removal of the concrete addition at the back of the building, would not result in adverse effects because it would follow the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and the character-defining features of the exterior would remain. The proposed parking lot would be set back behind the building, which would mitigate effects on the historic setting and feel of the structure. Reuse of the building would not alter the building in a manner that would diminish the historic integrity of the property, and it would remain a contributing resource to the historic district. The National Park Service has consulted with the Pennsylvania State Historic Preservation Office during development of the rehabilitation design for the building, and would continue to consult as needed to ensure there would be no adverse effect.

The proposed action would have no adverse effect on archeological resources. While the proposed action has the potential to result in adverse effects on archeological resources due to ground disturbance required for formalized trails, retaining walls, signage, and gathering areas, many would be located in previously disturbed areas where it is unlikely that intact archeological resources would be encountered. Additional archeological testing would be undertaken by qualified professionals for actions requiring ground disturbance in areas not previously surveyed or disturbed, and specific locations for the installation of ground-disturbing features would be dependent upon archeological clearance. An Unidentified Discovery Plan would be developed and implemented as needed to further mitigate potential adverse effects to unknown archeological resources. Therefore, implementation of the proposed action would result in no adverse effect on archeological resources.

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CONSULTATION AND COORDINATION

This chapter provides a list of agencies, tribes, and interested parties consulted during the development of the environmental assessment/assessment of effect.

LIST OF AGENCIES AND TRIBES CONSULTED

Agency and tribal consultation began early in the environmental assessment process and is ongoing to ensure that all relevant agencies are informed of any NPS planning actions. The following agencies and tribes have been or are being consulted:

- Advisory Council on Historic Preservation
- Delaware Nation
- Delaware Tribe of Indians
- Pennsylvania Bureau for Historic Preservation (State Historic Preservation Office)
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Game Commission
- Seneca Cayuga Tribe

PUBLIC SCOPING

Public scoping was initiated to provide information to and gather feedback from the public regarding the proposed Little Round Top rehabilitation. A public scoping meeting was held on December 4, 2014 and approximately 30 people attended including park staff, tour bus staff, local reporters, and members of the public. Informational boards were displayed around the room to provide the project's purpose and need, background information, primary impact topics, and issues and objectives of the alternative elements. The National Park Service recorded public comments at that meeting.

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As the nation's principal conservation agency, the Department of the Interior has responsibilities for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for American Indian reservation communities and for people who live in island territories under US administration.

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